

Published every Saturday by the  
Simmons-Boardman Publishing  
Corporation, 1309 Noble Street,  
Philadelphia, Pa., with editorial  
and executive offices: 30 Church  
Street, New York, N. Y., and 105  
West Adams Street, Chicago, Ill.

SAMUEL O. DUNN, *Chairman of Board*  
HENRY LEE, *President*  
LUCIUS B. SHERMAN, *Vice-Pres.*  
ROY V. WRIGHT, *Vice-Pres. and Sec.*  
FREDERICK H. THOMPSON, *Vice-Pres.*  
ELMER T. HOWSON, *Vice-Pres.*  
F. C. KOCH, *Vice-Pres.*  
ROBERT E. THAYER, *Vice-Pres.*  
H. A. MORRISON, *Vice-Pres.*  
JOHN T. DEMOTT, *Treas.*

CLEVELAND  
Terminal Tower  
  
WASHINGTON  
1081 National Press Building  
  
SEATTLE  
1038 Henry Building  
  
SAN FRANCISCO  
485 California Street  
  
LOS ANGELES  
530 West 6th Street

**Editorial Staff**  
SAMUEL O. DUNN, *Editor*  
ROY V. WRIGHT, *Managing Editor*  
ELMER T. HOWSON, *Western Editor*  
JAMES G. LYNE, *Assistant to Editor*

C. B. PECK  
ALFRED G. OEHLER  
F. W. KRAEGER  
E. L. WOODWARD  
J. H. DUNN  
D. A. STEEL  
R. A. DOSTER  
H. C. WILCOX  
NEAL D. HOWARD  
CHARLES LAYNG  
GEORGE E. BOYD  
WALTER J. TAFT  
M. H. DICK  
E. J. PHILLIPS  
JOHN H. KING  
W. H. SCHMIDT  
JOHN S. VREELAND

The Railway Age is a member of  
the Associated Business Papers (A. B. P.) and of the Audit Bureau of  
Circulations (A. B. C.).

Subscriptions, including 52 regular  
weekly issues, and special daily editions  
published from time to time in  
New York, or in places other  
than New York, payable in advance  
and postage free. United States,  
U. S. possessions and Canada: 1  
year, \$6.00; 2 years, \$10.00; foreign  
countries, not including daily edi-  
tions: 1 year, \$8.00; 2 years, \$14.00.

Single copies, 25 cents each.

H. E. McCandless, Circulation  
Manager, 30 Church St., New York,  
N. Y.

# Railway Age

With which are incorporated the Railway Review, the Railroad Gazette  
and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 106

March 4, 1939

No. 9

## In This Issue

### A Century of Express Service . . . . . Page 365

An article commemorating the Railway Express Agency's first hundred years  
in the transportation field.

### Restore Concrete Tunnel Lining by "Intrusion" Process . . . . . 373

F. D. Kinnie, District Engineer of the Santa Fe, discusses some of the interesting  
problems met by that road in connection with maintaining and repairing  
the concrete lining in its long Franklin tunnel, near San Francisco, Cal.

### Steam Locomotive Slipping Tests . . . . . 377

An abstract of the high-speed motion photography studies made by T. V.  
Buckwalter and O. J. Horger, of the Timken Roller Bearing Company, which  
show the causes of rail damage and indicate the corrective influence of lighter  
reciprocating parts and proper balancing.

### EDITORIALS

One Waterway Project Which Will Receive Critical Scrutiny . . . . .	361
The First Hundred Years of Express Service . . . . .	363
Boom of '20's Returns . . . . .	363
Critical Speed In Steam Locomotives . . . . .	364

### GENERAL ARTICLES

What Will the Traffic Bear?—3 . . . . .	364
A Century of Express Service . . . . .	365
How the Railway Express Agency has Modernized Its Operations . . . . .	369
Restore Concrete Tunnel Lining By "Intrusion" Process, by F. D. Kinnie . . . . .	373
I. C. C. to Sift Facts On Beaver-Mahoning Canal . . . . .	376
Steam Locomotive Slipping Tests, by T. V. Buckwalter and O. J. Horger . . . . .	377
R. E. A. Gets Rate Increase . . . . .	384
Omnibus Transport Bill Hearing . . . . .	386
Train Connection Bus Service on Monon . . . . .	388

### NEW BOOK . . . . . 388

### NEWS . . . . . 389

The Railway Age is indexed by the Industrial Arts Index and also by the  
Engineering Index Service

# More Product *from* Existing Plant



## *with "Union" C.T.C.*

In railroading, too, the key to better use of equipment and progress in production is based on the principle of continuous flow. Elimination of bottle-neck situations that slow up operations, requires the adoption of the principle of continuous flow—the "Union" Centralized Traffic Control System. Train operation by signal indication assures a smooth, uninterrupted flow of traffic. The result makes "Union" C.T.C. a quickly self-liquidating investment.

**UNION SWITCH & SIGNAL COMPANY**  
SWISSVALE, PA.

1406

NEW YORK

CHICAGO

ST. LOUIS

SAN FRANCISCO



# One Waterway Project Which Will Receive Critical Scrutiny

The report of the Army Engineers on the proposed canal to connect the Ohio river system with Lake Erie is a document of tremendous significance to the discussion of transportation legislation now going on in Congress. This follows from the fact that this report discloses a growing realization by these competent technicians that the adequacy of existing highway and railway facilities has a bearing upon the justification for the construction of a waterway project, which cannot be overlooked if the public interest is to be protected. The treatment of the Engineers' report by President Roosevelt is even more significant and heartening, because he discloses that he has referred the hesitant recommendation of the Army Engineers that this canal be built to the National Resources Committee for criticism; and has now asked the Interstate Commerce Commission to examine railroad rates and existing transportation facilities in the Pittsburgh-Lake Erie area, suggesting that, meanwhile, the construction of the waterway be delayed.

### Support for Committee-of-6 Recommendations

The action of the President with regard to this report, and the report itself, lend strong corroboration to no less than four of the fourteen recommendations recently made to the President by his "committee-of-six" which outlined for him the steps which must be taken to restore the railroads to efficient public service. The four recommendations to which the President and the Army Engineers have, by implication at least, given the strongest support are the following:

1. That a Transportation Board be established to investigate and report to Congress on "the relative economy and fitness of rail carriers, water carriers and motor carriers . . . with the view of determining the service for which each is especially fitted or unfitted."

2. That Congress establish "a reasonable system of tolls to be charged" for the commercial use of all in-

land waterways which have been made navigable at public expense.

3. That only such waterways be constructed in future as a "competent and disinterested tribunal" shall find to be economically justified, and hence in the public interest.

4. That bridge alterations in connection with waterway development be paid for by the government and not by the railroads whose bridges have to be rebuilt.

### Mr. Delano Asks Some Questions

The action of the Army Engineers and the President may be briefly summarized as follows: The Army Engineers recommend that the Ohio river and Lake Erie be connected by a canal (estimated to cost the federal government 207 million dollars and local communities 12 millions), following the route of the Beaver and Mahoning rivers. But the Engineers have also found that the project would not be justified if the railroads should reduce on an average of 29 cents per ton their rates on traffic which the canal would divert from railway movement. The President referred this report to the National Resources Board for comment, and got it in the form of a letter from the chairman of the Board's advisory committee, Frederic A. Delano, reading in part as follows:

This [report] raises a basic issue of policy. At a time when railroads generally are used far below capacity, is it making the most effective use of available construction funds to build a waterway to obtain benefits which might be obtained economically by readjustment in rail rates? This raises corollary questions. What would be the effect of the waterway improvement on the railways? What is the present capacity of the rail system? Would the proposed project encourage the further concentration of industry in the narrow valleys of the Youngstown-Pittsburgh-Wheeling area, and is such further concentration desirable?

These issues were not reported on by the Board of Engineers for Rivers and Harbors. In this and all other reports on navigation projects a balanced analysis of the transportation needs and facilities of all types in the regions concerned is

lacking. There is not even an accepted technique for determining the transportation needs of an area. The Advisory Committee feels that the study embodied in the report is inadequate, and can be corrected only by analysis from a broader viewpoint.

The President has made public this letter from the National Resources Board, and he has also made public a memorandum to the Secretary of War in which he largely endorses the views expressed by the Board, and suggests, moreover, that work upon the project be delayed. Furthermore he has written to the Interstate Commerce Commission in part as follows:

I wish that the Commission would undertake an investigation of rail rates in the area affected and review the report, as soon as it is printed, so that the Commission may advise me on whether or not rate reductions of the magnitude and type noted would be economically justified. I presume that such review would require consideration of the present railway and highway facilities in the area concerned, and of the effect which construction of the project would have on rail and motor carriers. These are problems which I should like to have examined before large federal expenditures are made for the project.

#### Proving the Contentions of the "Six"

Now, as to how the report of the Army Engineers and the action of the President corroborate the four recommendations of the committee-of-six enumerated above:

In the first place, the very fact that the President referred this report to the National Resources Board for comment, and the nature of the comment which he received from that Board, indicate a recognition by him of the need for advice on government policy with regard to water transportation from an authority which stands less in the position of an advocate of waterways than do the Army Engineers. Here is an expenditure of 207 millions of federal money which hangs in the balance, which, if made, will doubtless seriously deplete railroad revenues. And yet there is no competent and disinterested authority which is charged with the duty of advising the government whether the advantage which this waterway will confer upon favored shippers will not be more than offset by the harm it will do the railroads. Surely no more persuasive concrete case could be cited than this of the need for such a Transportation Board as the committee-of-six has recommended.

Secondly, the Army Engineers estimate that construction of the canal would cost the government 43 cents per ton of traffic moved upon it, but that the saving in freight charges to shippers (as compared with existing railroad rates) would be 72 cents per ton. Obviously, from these figures, the shippers could afford to pay tolls of 43 cents per ton for the use of the proposed waterway, and still be 29 cents a ton the gainer. Leaving the railroads entirely out of consideration, is there any social reason whatsoever why the federal government should use over 200 million dollars of taxpayers' money to build a transportation plant for shippers in Western Pennsylvania and Eastern and Northern Ohio, and not collect one cent from them by way of recompense?

These figures demonstrate beyond any doubt whatsoever the urgency in the public interest that the government follow the recommendation of the committee-of-six by the establishment of a reasonable system of tolls for the commercial use of improved inland waterways.

#### Unscientific Methods Can't Bring Out Dependable Facts

In the third place, in recommending that this waterway be constructed, the Army Engineers admit that their sole criterion of "economic justification" has been to compare existing railroad rates with estimated actual costs of transportation via the waterway. But any tyro in economic analysis could inform the Army Engineers that they cannot arrive at any opinion of the slightest economic validity by this process. The national income is increased when work is done at the lowest possible expenditure of materials and human energy. Hence, the Engineers cannot possibly prove that the national income will be increased by the construction of this canal unless they can demonstrate that it will do the job at lower outlays of human labor and materials than movement by railroad would require. Thus the Army Engineers not only have not established the "economic justification" of this canal; they have not even followed a method which could prove such justification. Surely the demonstrably unscientific procedure by which the Army Engineers have reached the conclusion that this project is "economically justified" corroborates the recommendation of the committee-of-six that such projects should be subjected to scrutiny by "a competent and disinterested tribunal."

And lastly, the Army Engineers themselves concede in this report the committee-of-six recommendation that the cost of bridge alterations in connection with the project should be paid for out of public funds, rather than being assessed against the railroads.

Possibly we may be clutching at a straw in attaching significance to this report by the Army Engineers, and in particular to the action which the President has taken with respect to it—but we do not think so. It is sufficiently rare to be a news event that the Chief Executive, or even an administrative department of the government for that matter, should have hinted that inland waterways are not hallowed; and that their usefulness is to be gaged by the same hardboiled standards as any other capital investment.

#### A New Policy, or Just a Flash in the Pan?

In any event, it is only in the direction which the President has indicated in his commentary on the Engineer's report on this canal, that there lies any hope of extricating the railroads from the difficulties which beset them. The basic trouble with the railroads is the inadequacy of their net railway operating income—and the chief reason for the inadequacy of their income is

that they are being forced to compete with the public purse, a handicap which no private enterprise can suffer and hope to remain solvent.

The course of action which the President has begun, if pursued to a logical conclusion, would lead inevitably to the exposure of the grotesque folly of public expenditures for these ruinous ditches. Whether the President will actually follow through and do what he can to translate into law his sound perception on this point is a matter upon which we do not, of course, undertake to guess.

## The First Hundred Years of Express Service

The Railway Express Agency today celebrates the centennial of express service on this continent—an event which we are commemorating herein by the publication of two articles on this unusual enterprise and its work. The first of the two articles reviews the business from an historical angle—from the time when the founder, William F. Harnden, first tested the possibilities of this specialized type of transportation service, down to the present day of the company's modern merchandising program. Throughout this entire period, as the article shows, the Agency and its predecessors have been alert to the needs of shippers for special and unusual types of service, and resourceful in discovering ways and means of providing it.

The second article analyzes the operations of the Agency as a modern business enterprise, showing the steps which it has taken to keep abreast or ahead of the times. Probably few people realize the extent to which R. E. A. is expanding beyond its time-honored specialized field of package transportation; or the possibilities for future growth which lie in these new activities. For example, between 8 and 10 per cent of all railway collection and delivery service is performed for the railways by the Express Agency. Other tasks which it is performing for the railroads include station-to-station transfer of l. c. l. freight, over-the-road truck operation and dealer-delivery of automobile shipments. By its truck-competitive rates in certain areas, the Agency has brought back to the rail a large tonnage formerly handled by trucks.

Just one instance of how the R. E. A. is endeavoring to open up new opportunities for shipment by rail: Small town retailers have never been able to sell fish, frozen foods and other such highly perishable goods (except those received by truck) because railroad refrigerator service is wholly a carload matter. But the agency is now offering a refrigerated container service which will enable the small town merchant to stock the same perishable foodstuffs as his big-city colleagues—and not have to do business with trucks to do so.

In its operating and engineering aspect, the Agency

has many recent improvements to show—among them its "endless chain" system of operation of platform trailers. Recent improvements of great significance have also been made in its accounting and rate practices. Perhaps the most fruitful change of all (because, in a way, it comprehends all the changes in the direction of modernization which have been instituted) is the systematic program of modern salesmanship which has been adopted.

The principal avenue to greater profitability of the Express Agency to the railroads which own it lies undoubtedly in an expansion of the gross business it does. Therefore, in demonstrating its ability as a handler of l. c. l. freight (including its experience in building up paying carloads out of small shipments) and its development of other accessorial services, the Agency is affording the railroads the means by which express operations can be made a source of much larger revenues.

## Boom of '20's Returns

In one regard the income accounts of the railways are coming more and more to look like those of the late Twenties. It is unfortunate, however, that this resemblance is confined to the matter of taxation. Figures recently made available for 1938 show that railway taxes last year averaged \$1,463 per mile of railway line in the United States. For the decade ending with 1929 the average was \$1,404.

Way back in 1890 the tax bill of the railways per mile of line averaged \$182. With a fairly slow but inexorable upward movement, this figure passed the \$200 mark in 1894, the \$300 mark in 1906, the \$400 mark in 1910 and the \$500 mark in 1914. The tempo then quickened; the \$600 level was topped in 1916, the \$700 and \$800 levels were topped at one jump in 1917, the \$900 level was topped in 1918, and the \$1,000 and \$1,100 levels were both topped in 1920. The rise continued. Annual railway taxes per mile of line first exceeded \$1,200 in 1922, \$1,300 in 1923, \$1,400 in 1925, \$1,500 in 1926, and finally exceeded \$1,600 in 1929.

Then came a downward trend. With depression-reduced gross and net earnings, there was an automatic reduction in railway taxes, based on those earnings. Rail taxes per mile of line dropped steadily from 1929 through 1935, falling below \$1,000 in the latter year. Then came the rebound. From \$996 in 1935, railway taxes per mile of line jumped to \$1,353 in 1936, to \$1,388 in 1937, and to \$1,463 in 1938. From 1935 to 1938 the increase was 47 per cent.

The tax bills of the railways present some interesting comparisons. Rail mileage today is most closely matched by the mileage in existence in 1909. Yet with approximately the same mileage, railroad taxes were some \$260,000,000 greater in 1938 than in 1909.

Railway gross earnings in 1938 were most closely matched by those of 1916. Yet railway taxes per mile of line averaged \$637 in 1916, as compared with \$1,463 in 1938.

Taxes per mile of \$1,463 in 1938 were most closely matched by the average of \$1,467 in 1925. Still, with this close approximation in average taxes, railway gross earnings were only one-half as great in 1938 as in 1925.

Truly, there are hardships in the return to the levels of the Twenties—when this return is confined to the matter of taxation alone.

## Critical Speed In Steam Locomotives

In his paper before the New York Railroad Club, an abstract of which appears elsewhere in this issue, T. V. Buckwalter, vice-president of the Timken Roller Bearing Company, presented the results of the extremely interesting and valuable study, made by his company, of the new jumping phenomena which the main driving wheels on a number of locomotives designed for high-speed operation have developed when slipping at high speeds. To find driving wheels leaving the rail at high

speeds and causing damage to the rail sufficient to require its removal is no new experience on American railroads. Occasional instances of badly balanced locomotives causing such damage have come to light over a long period of years. What makes the recent experiences with high-speed steam locomotives a new phenomena is that it occurs when the lifting forces of the dynamic augment caused by overbalance is not sufficient in itself to overcome the static load at the rail. In other words, the steam locomotive has advanced in speed to a point where it is entering a critical range in which forced vibrations have to be dealt with.

In designing steam locomotives which are intended to operate at speeds approaching and ranging above 100 miles an hour, this introduces a new factor into the problem of counterbalancing. Fortunately, the extensive tests conducted by the Timken Roller Bearing Company on several types of locomotives have demonstrated that a method of mathematical analysis is available involving the use of known data concerning the locomotive and readily ascertainable data concerning the track so that the critical speed for a given set of conditions can be readily determined. In the light of this study, it becomes evident that further refinements are necessary in methods of counterbalancing as well as in the design of reciprocating parts.

## What Will the Traffic Bear?—3

In the two preceding queries in this series, evidence was given to show how the present railroad rate structure on manufactured products enables trucks to haul goods upwards of 1,000 miles; and what is more, to make a profit on such hauls of as much as 176 per cent above operating expenses. It was demonstrated that trucks can make these big profits only by selecting the "cream" of the traffic. If they tried to handle low-rated commodities (or even the average traffic) over these long distances they would lose their shirts. It follows, therefore, that the existence of some rates so much higher than the average is the only condition which enables long-haul trucking to exist. Lower the highest rates and long-haul trucks would disappear.

But this is not the half of it. The fact that the rate structure enables the trucks to select freight paying such fancy profits gives them a backlog, enabling them to fill out their vacant space in the direction opposite the paying traffic with such low-grade commodities as cement, scrap iron and the like. The sharp variations in the rate structure thus are responsible for the diversion not only of high-grade traffic, but of low-grade traffic as well, away from the rails.

The trucks handle this low grade traffic at rates far below their average cost of operation—often for so little as barely to exceed their labor and fuel costs. The trucks could not afford to handle this cheap traffic if the railroad rate structure did not give them the chance to make fancy profits on the backlog of their traffic.

If railroad rates on manufactured products were based upon the cost of handling (wherever competition exists), there wouldn't be any freight paying fancy profits for the trucks to select. The trucks would be largely prevented from operating more than 150 miles—which is the maximum radius within which their actual costs are lower than actual costs of railroad handling. The railroads not only would not be deprived of the large volume of high grade traffic which they have lost to the trucks, but the trucks would also be prevented from picking up return loads of low grade freight at bargain rates.

The way to keep the trucks from taking the "cream" of the traffic, leaving the railroads the "skim milk," is to mix the cream and the milk together. Mixing the cream to prevent its being skimmed off is exactly what basing competitive rates on costs would do.

*Founder*



William F. Harnden

# A Century of Express Service

Railway Express Agency celebrates its first hundred years in the transportation field

**B**Y means of a pageant at the San Francisco World's Fair and other ceremonies throughout the country on March 4, the Railway Express Agency is commemorating the centennial of the express business—an industry that grew from one man with a carpet-bag to the widespread ramifications of the express business today, with its 70,000 full time and part time employees, doing business throughout the United States and in many foreign countries.

The beginnings of this mighty enterprise came in 1839, as the result of an idea evolved by William F. Harnden, who had been a ticket agent and a conductor for the Boston & Worcester, until he hit upon the plan of carrying small parcels, money and valuable papers from place to place on a for-hire basis. The industry thus founded by a railroad man has been intimately associated with the railroads during its entire existence, and, since March, 1929, it has been wholly owned by the railways.

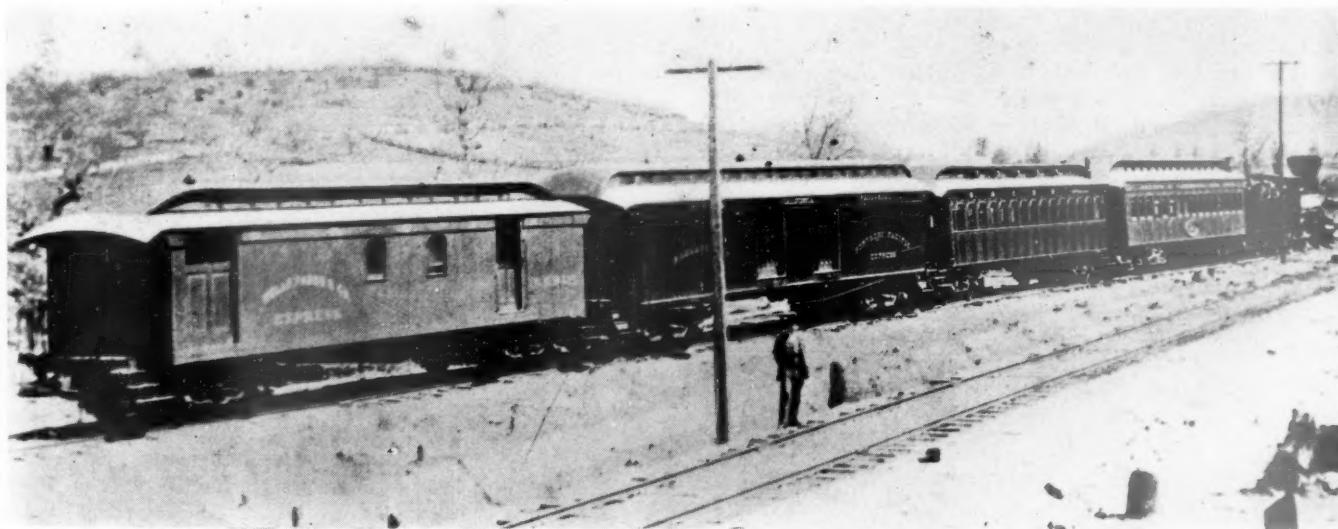
## A Steady Growth

The infant industry founded by Harnden filled such a need in the new and rapidly expanding country that its

operations were promptly extended beyond the New England states where it began, soon reaching the Mississippi as the tide of civilization flowed westward. At the time, there was no means of transportation between the Missouri river and the Pacific coast and all mail and goods had to be shipped via the long and cumbersome boat journeys around Cape Horn. The express companies undertook to fill this need, and, some years before transcontinental railway service was begun, the Wells-Fargo Express had built up an elaborate system of stage coach lines across 2,000 miles of our Western states, and had provided, as well, faster service for mail and valuables in the form of those romantic figures of song and story—the pony express riders.

Despite the attacks of hostile Indians and of highwaymen, the stages and the riders continued to provide the only transportation available, until, with the railroad expansion across the continent, they were able to transfer their activities from stages and horses to railway trains. It was some time, however, before even this new medium could equal some of the feats of the old pony express riders—among them that of Bob Haslem, who covered 380 miles on relays of ponies in less than 48 hours actual time on the road.

Meanwhile, the Adams Express had been expanding southward and, by means of its close connection, the Southern Express, it provided what was often the only means of communication between the North and South for long periods during the Civil War. During slavery



Express Service in the Early Days at the Present Site of Phoenix, Ore.

days, the shipment of negroes by express from one part of the South to another supplied the Adams Express with a thriving trade.

### Consolidations

By the time of the World War, the growing needs of the country for express service, and business rivalries within the industry itself, had resulted in the formation of seven rival express companies, all of which were consolidated as a wartime emergency measure under the name of the American Railway Express Company. After the war, the unified company was continued as a private enterprise until March 1, 1929, when, as a natural result of years of close affiliation, interdependency and mutual interests, the express business, under the name of the Railway Express Agency, became the property of the railways of the United States, and the tours and travel division was separated from the other activities under the name of the American Express Company.

### How It Operates

The capital stock of the Railway Express Agency is owned by 70 of the principal railways in the country

Cuba and Mexico. Fast passenger trains and high speed exclusive express trains are the principal means by which the express shipments are moved; and, since September, 1927, there has been a steadily growing service by aircraft, which now extends between approximately 232 important cities on regular frequent schedules of all the air carriers having contracts with the government for the carriage of United States mail. The air service of the Railway Express Agency is so co-ordinated with its rail service that air transportation for express shipments is available from or to almost all cities in the country; and, through a working agreement with the Pan American Airways, to nearly all the countries in South America, to several islands of the Pacific and to the Orient.

### The Express Service

The Railway Express Agency handles articles of every description and size, there being no weight limit except for shipments to be handled by aircraft. Jewelry, money, bonds and other valuables are handled by a special department and surrounded with every possible safeguard. Live animals, birds, fish and reptiles, which are regularly handled in express service, are fed and otherwise cared for, pursuant to consignors' instructions. Inflammables



Harden Express Office, 74 Broadway, New York, in 1858

over the lines of which more than 98 per cent of the express business is handled. It has contracts with 447 carriers, including practically all the railways in the country, in addition to its 70 owners. These contracts are uniform in all respects, and designate the Railway Express Agency as the exclusive agent of each such carrier for the conduct of express operations over its lines. Under different contracts, the express company also operates over electric railways, steamship lines and air lines, the mileage over which it operates being divided as follows:

Steam Railways .....	206,573
Electric Lines .....	2,722
Boat Lines .....	20,376
Motor Carrier Lines .....	12,208
Air Lines .....	37,966
Motor Cars—Rail .....	1,522
Ferries .....	5
Total .....	281,372

Its services extend over all the states and the District of Columbia and Hawaii and Alaska. The agency also operates in the provinces of Quebec, Ontario, Manitoba, British Columbia and Yukon territory in Canada; and in

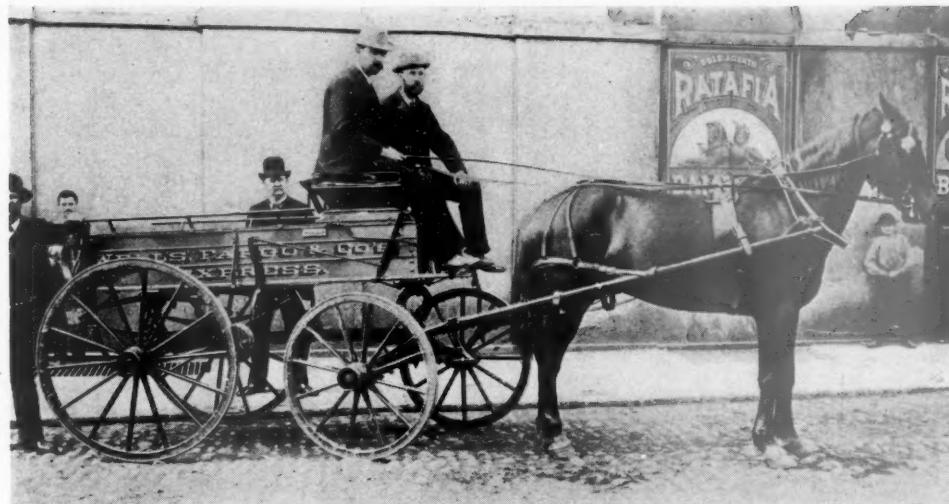
and corrosives are accepted and handled safely, as are such delicate shipments as nursery stock, cut flowers and ice cream. A large variety of so-called accessory services have also been made available to customers and to the railways themselves, as described in another article in this issue.

### Size of the Company

During 1937, the Railway Express Agency handled more than 140,000,000 revenue shipments, many of which consisted of two or more pieces from the same shipper to the same consignee, which are treated as a single "lot" shipment. To handle this huge volume of packages, the Agency maintains 23,000 offices for the receipt and delivery of express shipments, most of these offices being situated in railway stations.

More than 11,000 motor vehicles are utilized for local pick-up and delivery, intracity transfer between railway stations and over-the-road hauls of shipments in certain

A Neat Rig of the  
Vintage of 1875



cases. This fleet is replaced and augmented at the rate of between 1,000 and 1,500 new motor vehicles purchased annually, the figure for 1938 having been over 1,400 units. Over 45,000 four-wheel platform trucks, some motor-driven, but the majority manually-operated, are required to handle express at the railway stations, as well as 10,000 two-wheel warehouse trucks.

In recent years, a thorough modernization and mechanization program has been in successful operation covering all equipment of whatever nature. In addition to the hauling equipment, this has included station and platform equipment to a large extent. For example, in large cities served by various railroads, each of which has a separate terminal, it is necessary to pass express shipments through assorting stations after they have been picked up from the patrons' premises or before they are delivered to the consignees. To facilitate these operations, various types of conveyors are used, all based on the theory of providing a moving "train" of platform trucks that can be sorted as they move—an outgrowth of the practice in effect for some years whereby the trucks were coupled together and drawn by small gasoline or electric tractors operated on the platforms only.

#### Rates and Tariffs

The Railway Express Agency publishes more than two thousand separate tariffs covering the rates and charges for the transportation of all classes of property. Approximately one-half of the express traffic consists of

packages of merchandise from manufacturers or wholesalers to retailers or individual customers, the other half consisting of goods distributed locally from the larger distributing markets and within a reasonable trade radius, and of perishable commodities, both carload and less carload, forwarded from the areas of production to the consuming markets, including both long and short hauls. Many of the rates are quoted on the block system, under which the country is divided into blocks for rate-stating purposes. Separate tariffs are published on carload and less than carload shipments, and there are numerous commodity rates on various classes of perishable traffic, for example: fish, oysters, shrimp, fruits, vegetables, bread and bakery products, cheese, poultry, eggs, etc.

#### Rail-Express Contracts

Under the terms of its agreements with the railways, the Railway Express Agency assumes full liability for shipments entrusted to its care, and the patrons have no contractual relationship with the railways over which the express shipments are routed.

The railway, steamship, air and motor truck lines that carry express are grouped into two general classes—those which are parties to the express operations agreement and those not parties to this agreement. The carriers of the latter class are compensated for their services on variety of bases; some at fixed rates per hundred pounds or per shipment, others at fixed rates per day or per month, or on other appropriate bases.

A Modern Express  
Vehicle of Today





Traffic Requiring Extraordinary Care in Handling is an  
R. E. A. Specialty

However, the carriers which are parties to the express operations agreement share the entire net income of the Railway Express Agency as provided for in that agreement, no net income being retained by the Agency from its operations, and no dividends being paid on its capital stock.

Under the express operations agreement, the railroads and other carriers involved are assigned to four territorial groups: eastern, southern, western and mountain Pacific. The agreement provides that 85 per cent of the gross express transportation revenue from carload shipments moving from one consignor to one consignee at one destination under rates which exclude vehicle pick-up and delivery service, shall first be paid to the carriers over



A Real Photo From the Past (Not a Movie "Still")

the lines of which such shipments moved. The remaining 15 per cent of such gross revenue and the gross revenues and income from all other sources are allocated and apportioned according to the territorial groups in which they were earned.

After subtracting therefrom the operating expenses and all other deductible items, including payments for services to carriers not parties to the agreement, the balance is designated "rail transportation revenue" and distributed among the carriers of each territorial group who are parties to the agreement, in the proportion that the gross express transportation revenues on other than carload business earned on the lines of each such carrier bear to the gross express transportation revenues on other than carload business earned on the lines of all such carriers within the group. The carriers which are parties to the express operations agreement receive no other payment than the above for their services in transporting express matter.

#### A National Service

The Railway Express Agency of today comprises a national service—the amalgamation of a large number of individual companies, many of which were formed and operated by the railways themselves, and all of which were intimately and inseparably associated with the railways during their operation. The last of the individual companies was the Southeastern Express Company, which operated an express business over the lines of the Southern and its subsidiary railways prior to August 1, 1938.

On that date, however, the Southeastern Express Company was dissolved and the R. E. A. entered into a contract with the Southern Railway and its subsidiaries and affiliates under which it operates express service on these lines, so that, today, all of the railway express business in the United States is handled by the Railway Express Agency—that is to say, under the ownership and for the benefit of the railways themselves.

#### Is Canal Transportation Really "Cheap"?

If "cheap transportation" is sought, regardless of its cost to taxpayers why should not the railroads be subsidized to the extent enjoyed by other forms of transport? Were the burden of taxes removed from the railroads and the roads compensated to the extent of the cost of acquiring their rights of ways and constructing their trackage and buildings, and the maintenance taken care of by the public, then indeed very substantial rail rate reductions could be made. And the benefits accruing therefrom would accrue to shippers everywhere and not benefit a few in favored localities along some canal or some stream made navigable at public expense.

The government-dredged and maintained channel of the Ohio River has cost the taxpayers \$142,000 per mile in construction costs. And it costs nearly \$4,000 per mile per year to maintain and operate—miles that are measured as the river winds. The "cheap transportation" thus afforded is cheap only to the favored user of these facilities.

How do these high concealed costs compare with the railroad industry? The investment in railroad construction averages about \$62,000 per mile, including the cost of sidings, multiple main tracks and yards, and the average annual maintenance cost is about \$1800 per mile.

*From an article by  
D. B. Robertson in the B. of L. F. & E. Magazine*



Modern Cab-Over-Engine Internationals, Forming a Part of R. E. A.'s Fleet of 11,300 Motor Vehicles

## How the Railway Express Agency Has Modernized Its Operations

Service, sales and operating methods of Railway Express Agency revised in last six years

FOR 50 consecutive months following the inauguration of a "More-Business Plan" by the Railway Express Agency, the traffic of that company showed consecutive increases. This plan, started in 1933, when the express business was at its lowest level in history, was based upon the idea of making of each employee an enthusiastic and well-informed salesman. Other innovations in the way of improving service to the benefit of the shippers and the railways, and to reduce operating expenses, have included a large expansion of air express and co-ordinated air-rail express services; the provision of a large number of accessory services, such as the handling of baggage and the pick-up and delivery of less-than-carload freight shipped by rail; the formation of a general sales department on an entirely new basis for selling transportation service; the mechanization of terminals to increase the speed of handling; the simplification of accounts, resulting in large annual savings; and other means of increasing earnings of the Railway Express Agency, despite the business depression.

### The More-Business Plan

The More-Business plan was originated in 1933, and has been continued with unflagging energy ever since. It started with a series of meetings of employees throughout the country, attended by the president of the Agency, and the programs at these meetings were designed to produce incentive and information to the large, but hitherto inert, body of potential traffic salesmen, represented by the thousands of employees of the Agency.

These meetings have been continued, augmented and improved, and they are supported by regular and special publications giving sales "tips," results of employee sales

accomplishments, and much other information that is valuable not only to the officers directly charged with promoting sales, but to the employees as well, in their individual efforts to increase traffic. This has been supplemented by a comprehensive and well-planned advertising campaign, using practically all the accepted media such as newspapers, magazines, radio, pamphlets, etc.

A natural outgrowth of this increased sales activity and the results obtained therefrom was the creation of a general sales department for the purpose of selling



Canvas Container Weighs 78 Lb. Less Than Wooden Box  
Which it is Replacing

Such canvas boxes, for light packages, are saving the R. E. A. the handling of over a million ton-miles of dead weight annually. The old wooden trunk weighs 135 lb.—the canvas container, 57 lb.



**Light Weight Gravity Conveyor**

*One man can easily move this conveyor and, with it, 2 men can unload 8 packages per minute*

the transportation and other services offered by the Railway Express Agency. This new department, formed in October, 1936, has complete charge not only of sales promotion efforts, but also of public relations, publicity and advertising, under the direction of a general sales manager. It is from this office that the More-Business plan is directed, and from which the sales literature of all sorts emanates.

The field set-up is unique in the transportation field and has been the subject of study by several railroads. The operating activities of the Railway Express Agency are under the direction of 4 regional vice-presidents and 13 general managers, with headquarters at strategic points. Each of these general managers has a district sales manager on his staff reporting directly to him, and this officer controls the sales activities of the commercial agents and all employees within the zone. The general sales manager pays frequent visits to all the territories, and supplies the district representatives with suggested programs for their sales meetings, but the district managers are in very close touch with the operating department at all times, and hence are in a position to give a prompt answer to all customers with respect to operating as well as traffic matters.

Since much of the express business is highly seasonal in character, another function of the general sales department is to keep the district managers informed as to coming seasonal movements, so that special sales campaigns may be outlined for each class of seasonal traffic before the shipping season is under way, and special advertising literature distributed. This department has also been successful in securing additional traffic by means of careful studies of the merchandising problems of shippers to the end of expanding their business and increasing their sales by the use of express service.

#### Accessorial Services

The Railway Express Agency is the largest individual contractor for the pick-up and delivery of railway merchandise in the country, handling between 8 and 10 per cent of all this traffic. This is a development of the new plan begun in 1934 of providing a wide variety of accessorial services not hitherto attempted by the Agency. The success attending these efforts is indicated by the

fact that the gross return from such activities has increased from \$825,134 in 1934, the first full year of the new activities, to \$2,543,843 in 1938. The accessorial services show a substantial profit.

#### C. and D. for the Railroads

Freight pick-up and delivery is the largest accessorial service, and the Agency contracts for this work with nearly every railway in the country at one or more points, serving more than 1,000 stations. The agency is also the largest railroad baggage pick-up and delivery contractor, as well as handling a large amount of station baggage work for the railways. Other accessorial services include the station-to-station transfer of L. C. L. freight, over-the-road truck operations, handling of mail and supplies, handling of milk and cream shipments, and delivery to dealers of carloads of automobiles, all of which are performed for the railways.

#### Expressmen as R. R. Traffic Solicitors

Among the advantages accruing from handling of all l. c. l. pick-up and delivery by the Agency, for all railroads, which is in effect at such points as Denver, Colo., and Jacksonville, Fla., is the fact that only one truck need call at any one shipper's platform, since all freight for all railways, or all merchandise to be delivered to one shipper, may be consolidated, thus saving time and platform space at the shippers' loading docks. In addition, in cases of this kind, special operating arrangements may be worked out for the improvement of the service that would not be possible in cases where many individual draymen are employed. There is also the further factor that such an arrangement gives the railways a large additional trained selling force in the Agency drivers and other employees. Numerous traffic tips for the railways are developed in the cities in question, and the Agency distributes these impartially among the railways involved.

Another activity in recent years has been the provision of express service at truck-competitive rates. This service is general on the railways of the Southeast, although confined by mileage limitations to the most keenly competitive trucking distances. By the provision of this rapid service, which also comprises pick-up and delivery

long after the freight stations in the area close, traffic amounting to \$6,000,000 annually has been returned to the railways in the territory involved. Similar service in a small area in upper New York state has developed a \$140,000 increase in railway revenue; and \$135,000 annually has been brought back to the rails by this means, between Portland, Ore., and Seattle, Wash.

Experiments in the handling of express by airplane were begun as early as 1919, but it was not until 1927 that the service passed from the experimental stage. In 1928, the first full year of express operations, the four air lines under contract had a total mileage of 4,450, whereas, in 1938, air express was flown over 35,000 route miles by 19 domestic air lines, and a considerable foreign business had been built up. In the first year of operation, 17,006 shipments were carried. By 1931, at the low ebb of express business in general, this had dropped to 9,074 shipments. However, under the inspiration of the More-Business plan and increased sales efforts, air express experienced a remarkable growth in the succeeding years, so that, in 1938, a total of 716,889 shipments were carried, weighing 2,371 tons, the average air express shipment weighing 6.06 lb., more than 500 planes being in use for the carriage of air express.

The airports of 232 cities are served directly by air express, and, through the co-ordination of air and rail express, each of the 23,000 cities where the express company has an agency is also afforded the benefits of such service. In all, about 30 per cent of the air express also moves by rail for part of its journey.

#### Trans-Oceanic Air Express

In addition to the domestic air-express service, the Railway Express Agency entered into contracts with the Pan-American Airways in 1934 for the provision of this service from this country to the various South and Cen-

tral American countries served by that air line. The success of this service caused its extension some months later to include the air lines of Pan-American to the islands of the Pacific and to various places in the Orient.

#### Mechanization of Service

Co-incident with the sales efforts, a continuing study has been made as to means of improving express service and reducing operating costs by means of mechanical improvements. Prominent in this campaign was the elaborate and complete study made of the huge truck fleet of the Railway Express Agency, which now amounts to more than 11,300 units. All of the cities throughout the country have sizeable fleets of Railway Express trucks and each was studied to determine if the proper vehicle was being used for the job at hand, and also to improve the operation of the existing vehicles. This has resulted in a revolutionary change in the character of the Railway Express fleet, and a marked reduction in operating expenses.

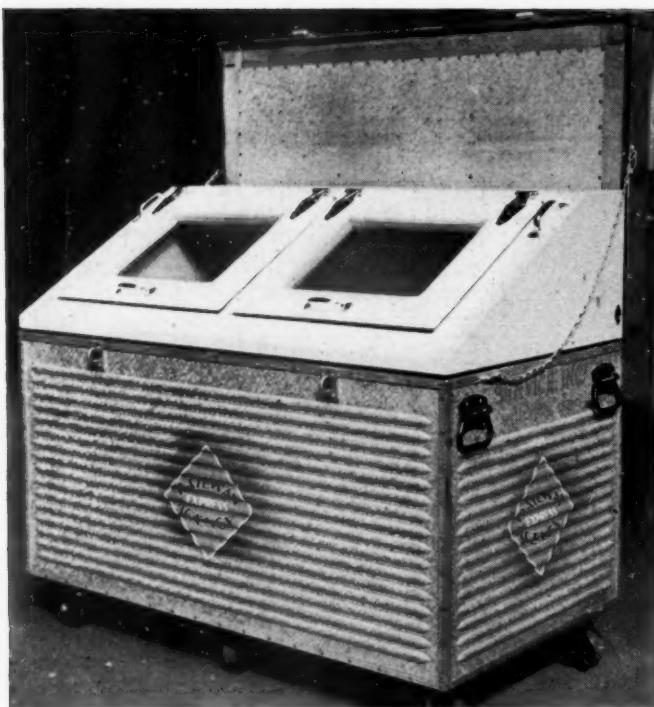
A similar campaign devoted to express handling at stations and terminals has resulted in improved service and in operating economies. An overhead chain system for the handling of trucks to and from car doors has proved most efficient, particularly when coupled with the use of Dow metal gravity conveyors in getting the express in and out of the cars. These conveyors are manufactured from an alloy which is strong, yet only one-quarter the weight of steel, so that one man can easily move them about from place to place as required. So far, three large terminals (Inland Terminal, New York; Burlington Terminal, Chicago; and Union Terminal, Jacksonville, Fla.) have been so equipped and contracts have been let for a similar installation at the North Western Terminal in Chicago.

The latest installation of the chain system and con-



An Innovation Which is Revolutionizing Package Handling

*The platform trailers move on an endless chain at 1 mile per hour. They pass all the cars being unloaded and those being loaded, slowly enough so that packages can be put on them or taken off without stopping the trailers. Thus platform congestion is ended and outbound cars are loaded almost simultaneously with the unloading of inbound cars.*



**Bringing Perishables to the Small Town**

The Church container permits either light or heavy refrigeration, affording refrigerated service to towns too small to buy by the carload. With the showcase top, illustrated above, the retail merchant can sell frozen foods directly from the container, saving the expense of a costly refrigerator installation.

veyors is at Jacksonville, which was installed on December 6, 1938, and from which astounding results were obtained immediately. During the Christmas rush, between December 13 and December 25, this terminal transferred 2,577 carloads of express packages, consisting mostly of citrus fruit gift packages weighing from 60 to 100 lb., without delay to a single car. This would have been completely impossible without the use of the conveyors. The Railway Express Agency now owns nearly a mile of these metal conveyors in service at various points and plans the purchase of a great many more lineal feet of this device.

#### Simplification of Accounts

Since the Agency handles 140,000,000 shipments annually, the problem of distributing the express revenues to the railways under the express operations agreement involves a huge amount of detailed accounting. This had grown through the years into an extraordinarily complicated and, in many cases, unwieldy procedure, which was extremely expensive to carry on. Under the direction of a committee, an intensive study was made of the possibilities of simplifying this huge volume of paper work, and, under the present system, large economies have been effected through the elimination of much waybilling, route stamping of waybills and other related changes in the operating and accounting departments, without sacrifice of the accuracy or fairness of the distribution of revenues.

The main features of the plan are the distribution of the revenue among the carriers in each group and the apportionment of intergroup revenues among the groups on the basis of percentages arrived at by using the returns during a test period (the four quarters ending on May 31, 1938). There were inevitably certain exceptions that had to be made from this broad general basis

of accounting and distribution of revenues, but all the details were considered and ironed out between the Agency and the railways owning it, and the plan is working out to the complete satisfaction of everyone concerned.

#### Change in Rate Basis

Express rates in general, and particularly on small packages, consist of three factors—a so-called express terminal allowance, a rail terminal allowance, and a haulage charge.

The express terminal allowance has been at various levels, but it is now on a flat charge basis of 35 cents per package, in addition to the regular rate per pound, which results in a disproportionately high rate on shipments of 100 lb. or less.

As a part of the detailed studies made in connection with the More-Business plan, it developed that this high express terminal allowance was responsible for the diversion from express of the small package traffic which was at one time exclusively shipped in express service, and it has also been responsible for building up, particularly in the metropolitan centers, of so-called express packing companies, which consolidate express shipments to avoid the terminal charge on each shipment, at a certain fee to the shippers for their services. It is now proposed, as a part of a general express rate revision which has just been approved by the Interstate Commerce Commission, to reduce this express terminal allowance materially, to eliminate the undesirable feature of disproportionate rates on small shipments and to bring about a return of such traffic to express service.



**West Side Terminal, New York**

Here pick-up shipments are brought and sorted for delivery to the various railroad terminals, where they will begin their line-haul

**View of the Intrusion Process. Note Water Being Forced Out of the Voids in the Concrete**



## Restore Concrete Tunnel Lining By "Intrusion" Process

Work in 5,600-ft. single-track bore of the Santa Fe near San Francisco, Cal., involved interesting problems and procedure

**By F. D. Kinnie**

District Engineer, Atchison, Topeka & Santa Fe, Los Angeles, Cal.

TROUBLED with serious difficulties in maintaining the concrete lining in its long Franklin tunnel, near San Francisco, Cal., due to excessive earth pressures and unusual deteriorating influences, the Atchison, Topeka & Santa Fe has recently completed a project of repairing this lining, features of which were the use of the "intrusion" process in solidifying and waterproofing the lining, the rebuilding of the spalled areas by the pressure-gun method, and the fumeproofing and waterproofing of the entire surface of the concrete.

Franklin tunnel, a single-track bore 5,600 ft. long, is situated on the main line about 30 miles east of San Francisco, Cal., where the line pierces a spur of the Coast Range mountains at an elevation of 135 ft. above mean high tide in San Francisco bay. From east to west the line through the tunnel ascends on a grade of 0.8 per cent to a summit at approximately the center of the tunnel and thence descends on a grade of 0.2 per cent to the westerly portal.

Originally the tunnel was lined with timber but from the beginning serious trouble was encountered with the lining. Construction of the tunnel was started in May, 1898, and completed in July, 1899, but because of frequent failure or movement of the arch-supporting posts it was July 1, 1900, before the tunnel could be opened to traffic, and April, 1901, before final retimbering was completed.

During the excavation and original timbering, considerable trouble was encountered because of the presence of so-called "swelling earth" and the occurrence of

slides, caving and gas pockets, which resulted in the buckling, breaking and lateral movement of the arch support posts. At first the external pressure was greatest at the bottom of the bore, causing the floor to heave



**Surface Imperfections in the Concrete Were Repaired by the Pressure-Gun Method**

and forcing the lower ends of the posts in toward the center of the tunnel. This movement was stopped by placing cross sills or struts between the posts below the base of the rail, but the pressure gradually increased until the posts at the spring line and the arch timbers were forced inward and out of line. This made it necessary not only to renew the timbers but to place intermediate posts, as well as to place spreaders or struts at the spring line of the arch and at a point nine feet above the floor, leaving only sufficient headroom for the passage of equipment.

Because the timbers in many places had been forced in as much as two feet on all faces, it was necessary in relining the tunnel to carry out additional excavation of the walls, roof and floor to obtain the required section. A new tunnel section was also adopted which was designed to resist pressure from all directions. However, after the lining had been removed, in accordance with the new design, the earth in the vicinity of the tunnel continued to increase in volume, and because of the movement thus engendered and the increase in pressure, the new lining also failed, again requiring the enlargement of the section and the placing of new timbers. This process was repeated until some sections had been enlarged and retimbered two to six times.

In an effort to determine the cause of the earth movements in the vicinity of the tunnel, an analysis of the backing material was made which disclosed that this material consisted of a species of talc known as "swelling earth." For the purpose of determining if the swelling action of the material could be stopped by excluding air from contact with it, an experimental section of concrete masonry lining, 100 ft. long, was constructed at about the center of the tunnel. This experimental section soon failed, indicating that air action was not a main factor in causing the ground to swell.

However, the railroad was still not satisfied with the available information concerning the character of the material in the vicinity of the tunnel and for the purpose of making further study of the subject a second experimental section was constructed. This section consisted of a tunnel 25 ft. in length, which was constructed off the main tunnel at an angle of 90 deg. Half of this tunnel was lined with concrete and the other half was provided with a timber lining so that the backing material was open to the action of the air. The timber portion



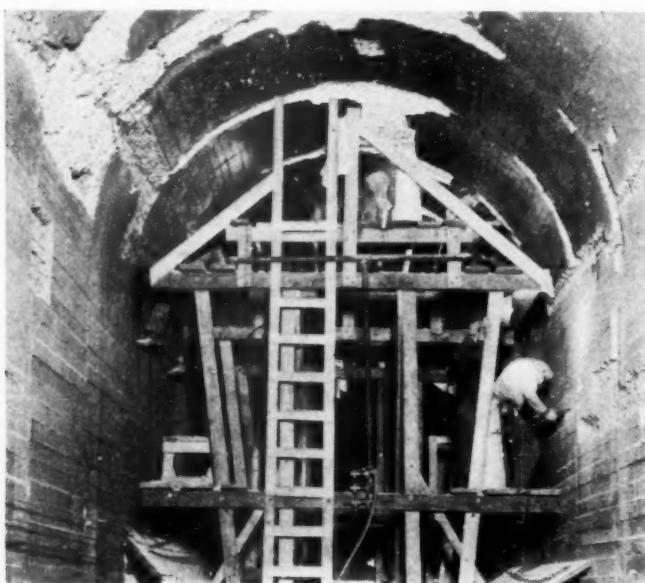
Holes Being Drilled for the Intrusion Process in a Portion of the Lining to Be Given Surface Repairs

quickly showed signs of failure but the concrete portion remained intact for about two months, at which time a slight movement was apparent at the end nearest the main tunnel and at the top of the section, the bottom remaining stationary. This condition led to the rupture of the concrete and within a short time it was necessary to close the drift to avoid damage to the main tunnel.

On the basis of information obtained through study of the experimental sections the conclusion was reached that the replacement of the entire timber lining in the tunnel with a concrete lining provided the best solution of the problem, and the work of putting this decision into effect was started in September, 1907. However, as this work progressed intermittently, being prosecuted only as it appeared necessary or desirable, it was not completed until October, 1910. The dimensions of the tunnel as it was rebuilt or relined, and as it remains today, are shown in the accompanying cross section. The tunnel has a concrete floor, is provided with a roadbed of crushed rock ballast and has a center drain.

During recent years it became evident that failure of the concrete in the tunnel lining was taking place on a considerable scale. The water sheds on each side of the divide pierced by the tunnel discharge their run-offs through channels which lie to a considerable extent immediately above the bore. The material overlying the tunnel at the location of these channels is quite pervious and, as a consequence, 1500 ft. at the east end thereof and 1000 ft. at the west end, have been subjected to the action of the water which percolated through the pervious material. This water, in combination with gas fumes from locomotives, caused serious spalling of the concrete, the condition finally becoming such as to make it necessary to undertake repairs to the lining or strengthening of the affected sections. The arched surface of the dry section also began to show the effect of locomotive blasts and in a few locations the effect of earth pressure, so it was concluded to include in the repairs that portion of the tunnel section.

Various methods of restoring the strength of the tunnel lining were considered. It was not possible to reduce the size of the bore by adding to the existing lining, and the extent of the work necessary and the cost of replacing or reinforcing the existing tunnel sections with steel or precast concrete, or both, made these



One of the Scaffold Cars That Was Used for the Chipping Operation

methods seem impracticable since it would be necessary to remove both good and bad concrete to effect repairs in such a manner.

Because of these considerations it was decided to carry out a restoration program involving (1) the solidifying and waterproofing of the existing lining by the intrusion process, (2) the rebuilding of the spalled areas by the pressure-gun method, and (3) the fumeproofing and waterproofing of the entire surface of the concrete. The intrusion method employed consisted of forcing a cementing, void-filling material that solidified quickly, into the honeycombed and cracked concrete. Therefore, where this method was used, it was not necessary to remove the entire mass and the work could be done at a comparatively small cost, and at a considerable reduction in the time required to do the work and in delays to train operation.

The material used in the intrusion process consisted of a special hydraulic concrete containing Portland cement and a hydraulic active filling material. When mixed in a plastic state it was readily forced into the porous concrete so as to fill the voids completely, and set into a hard dense concrete that was thoroughly bonded in place. It did not separate or plug during the intrusion process, and did not shrink. The volume of water used in the mix and the proportions of the ingredients were determined by conditions at the time and place of application. The quantity of intrusion material used per cubic yard of defective concrete restored averaged 6.2 cu. ft. Observations of test cylinders and core specimens indicated that the lining in those portions of the tunnel that had been repaired by this process developed a strength of not less than 3,000 lb. per sq. in. in 30 days.

In repairing the surface failures in the lining concrete, as evidenced by spalling and cracks, conventional practice was followed in chipping out the defective material, using pneumatic hammers, and in placing and anchoring reinforcing steel. These cavities were then filled with the same material used in the intrusion process, which was applied by the pressure-gun method. After the structural repairs had been completed, the surface of the



This View Shows Where Water is Being Forced Into the Lining to Flush the Voids and to Determine the Structural Value and General Character of the Concrete

concrete in the arch was fumeproofed by first sandblasting it and then by applying the fumeproofing material under a pressure of 80 lb. per sq. in. This material was applied by means of pneumatic grinders especially fitted with tubing in such a manner that the sealing material reached the surface of the concrete through the arbors of the carborundum surfacing wheels used. Thus, simultaneously with its application, the material was worked into the surface of the concrete, and since it had sufficient body to fill the surface voids and was highly resistant to blast action and fumes, its application resulted in a dense and durable "case hardening" of the concrete. In the repaired portions of the tunnel no water seepage has occurred since the work was completed.

In carrying out the repair work in the tunnel the contractor used ten scaffold cars, which were so constructed that all surfaces of the lining could be reached from working platforms. Each car was a complete operating unit in itself and was moved in and out of the tunnel by means of a self-propelled, standard-gage, track-mounted air compressor which did double duty as a switch engine and as a power plant for operating pneumatic tools and equipment.

All the work cars were of the same basic type and construction and were each fully equipped and self-sustaining, so that in a few minutes time they could readily be converted from one operation to another, that is, for instance, from chipping work to the application of the intrusion material or vice versa, by the simple addition or transfer of tools and special equipment from other cars or storage. In fact, this was frequently necessary in order to keep the various operations moving at a uniform rate. All ten cars were fully piped and equipped for any part of the work.

In general, however, two cars were usually assigned to each of the five divisions of the work, namely, (1) drilling and chipping, (2) the placement of reinforcing steel, (3) pressure application of concrete to surface cavities, (4) intrusion, and (5) waterproofing and fumeproofing. To prevent displaced material from dropping onto the track, the drilling and chipping cars were provided with adjustable side boards or aprons, thus very little track clean-up work was necessary before train movements.



The Entire Surface of the Arch Was "Case-Harden" With a Special Material That Was Applied by Means of Hand-Operated Pressure Machines

#### Equipment on "Intrusion" Cars

In the intrusion process the material was pumped into the concrete by an air-operated plunger-type pump having a discharge capacity of 35 gal. per min. and capable of

exerting a maximum nozzle pressure of 465 lb. per sq. in., discharge taking place through a 1-in. high-pressure hose. Two tanks for mixing the intrusion materials were provided on each car. While one tank was being pumped, the other was being mixed, so that the pumping operation could be carried on continuously, the opening of one feed valve and the closing of another being all that was necessary to switch from the empty to the full tank. The capacity of the feed or mixing tanks (60 gal.) was such that approximately the same time was required for mixing in one while the other was being emptied during the pumping operation. Each mixing tank was provided with mixing and agitation blades propelled by an air motor, which were in continuous motion during both the pumping and mixing operations.

Approximately two to four gallons of water were required for each cubic foot of intrusion materials, the

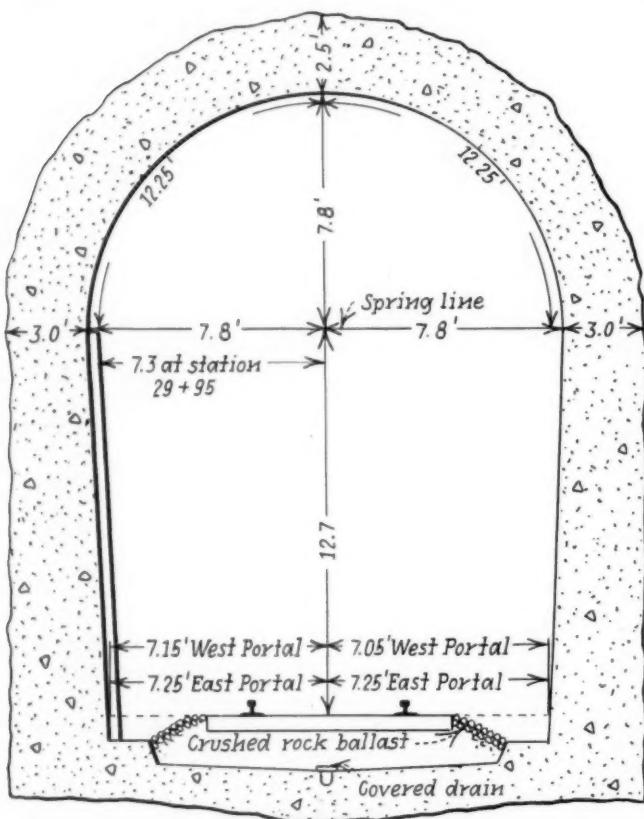
walls, spring line or roof. After the water test had been completed, those places where water had flowed through the face of the concrete were sealed. For this purpose concrete was generally used, although oakum or some other sealing medium was used in the case of large openings. The intrusion operation then followed, generally immediately, although this was not necessary. In this operation the mix was injected into the concrete through expanding inserts placed in  $1\frac{3}{4}$ -in. holes.

Because of the mobility of the equipment in use and the length of the tunnel, the several operations involved in the repair work were carried on simultaneously. The work was started at the east end and was carried on throughout the entire length of the tunnel.

All train movements through the tunnel occurred at night after working hours, except for one passenger train in each direction during the lunch hour, when the work cars were brought out of the tunnel. At this time any necessary switching or shifting of positions of the cars was done and any required supplies were loaded. The work cars could get into the clear at both ends of the tunnel during this train period; however, at night the equipment was moved to the east end where the camp was located and where supplies were stored. All work equipment employed on the job could be moved into or out of the tunnel to clear trains in about 15 min. As a result, there was little delay to the work because of train movements and the work was carried on without any disruption to normal train service.

Following the passage of trains the tunnel was cleared of smoke and fumes by the usual exhaust fan method and this operation was so timed that the atmosphere in the tunnel was usually clear by the time the cars were ready to resume work. To keep the tunnel clear of dust and gases at other times, when work was underway, the ventilating system was frequently put in operation.

The work of repairing the Franklin tunnel was carried out under the general supervision of G. W. Harris, chief engineer system of the Santa Fe, and M. C. Blanchard, chief engineer, Coast lines. The writer was in charge of the work and Roger Goode was resident engineer. The work was done under contract by the Dur-ite Company, Chicago, with Louis S. Wertz, president of this company in charge of the operations, and Lee Turzillo, superintendent of construction.



Cross-Section of the Franklin Tunnel of the Santa Fe

proportion of water to materials varying with the density of the mass to be solidified. In all cases, however, the mix was made as dense and as stiff as could readily be forced into the voids to be filled. This density or stiffness was determined in advance by forcing water through holes drilled previously in the concrete and observing the pressure and volume of water which would be taken. This being known, the operator in charge, through experience and training, could determine the desirable consistency and water content of the intrusion materials for the area in question. Another function of the water test was to help determine the number, location and depth of the holes that had to be drilled for the injection of the intrusion material.

The area covered in the water test and intrusion operations varied from 2 to 20 sq. ft. It was not unusual to have the water expelled from the concrete at points 20 ft. or more from the place of introduction. Depending upon conditions, it was ejected from points in the side

## I. C. C. to Sift Facts on Beaver-Mahoning Canal

WASHINGTON, D. C.

**C**HAIRMAN CASKIE of the Interstate Commerce Commission has advised President Roosevelt that the commission will be glad to comply with the President's wish to have an investigation made of freight rates in the territory wherein the Board of Engineers for Rivers and Harbors has recommended to the House committee on rivers and harbors the construction of the so-called Beaver-Mahoning canal at a cost to the federal government of \$207,257,000. The President's suggestion to the I. C. C. came after he had had the Board's report reviewed by the Advisory Committee of the National Resources Committee; and it was inspired by the army engineers' finding that "if the railroads would permanently reduce rates by an average of 29 cents per ton prior to the construction of the waterway the through project could not be justified."

When he submitted the Board's report and the con-  
(Continued on page 388)

# Steam Locomotive Slipping Tests\*

Studies made with high-speed motion photography show causes of rail damage and indicate the corrective influence of lighter reciprocating parts and proper balancing

By **T. V. Buckwalter**, vice-president, and **O. J. Horger**, research engineer,  
Timken Roller Bearing Company, Canton, Ohio.

THE demands for higher speeds in railroad transportation are requiring locomotive operation at higher than diameter speeds. These faster schedules have involved locomotive speeds approaching and, in some cases, exceeding the top safe operating speeds for conventional steam locomotives from the standpoint of the danger of causing rail damage. Concurrent with the high operating speeds has been the demand for more powerful locomotives, particularly in the upper speed range, and these two requirements have accentuated the dynamic forces on the rail resulting principally from counterbalancing conditions.

The introduction to service of the New Haven 4-6-4 type passenger locomotives in 1937 focused attention on the subject of rail damage. Because of the feeling in some quarters that rail damage on the New Haven might have been due to some extent to the introduction of roller bearings on the drivers of this new power, it was suggested by W. C. Sanders of the Timken Roller Bearing Company that definite slipping tests be made on the New Haven on greased track to produce high rotative driving-wheel speeds. These tests were made on the New Haven and similar tests conducted subsequently on the New York Central and the Santa Fe.

\* Abstract of a paper presented in connection with motion pictures before the New York Railroad Club, February 17, 1939.

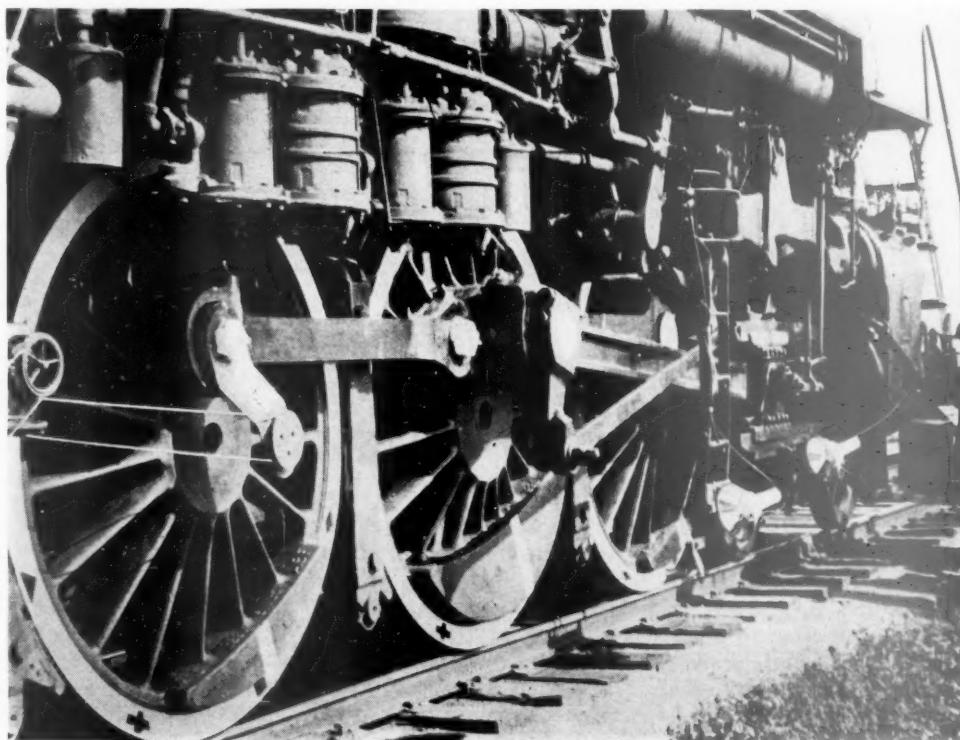
As a result of the tests on the New Haven of two locomotives, one equipped with plain-bearing driving axles and the other with roller-bearing axles, the overbalance on the main wheels of the new 4-6-4 type locomotives was reduced from about 200 to 100 lb. with a satisfactory correction of the rail damage condition.

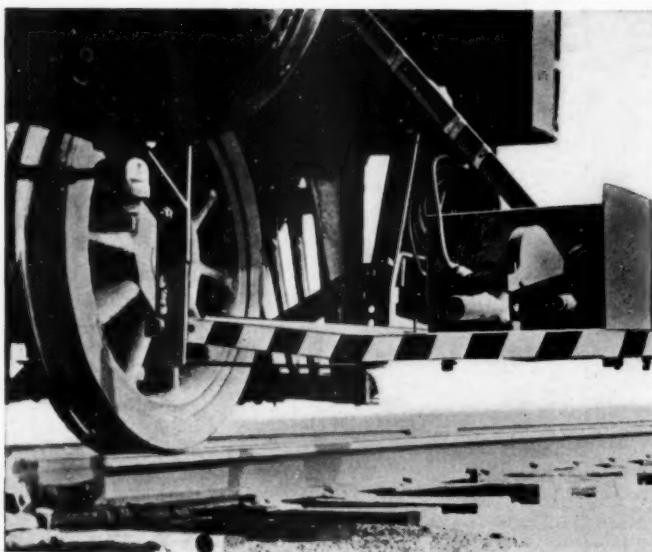
On the New York Central slipping tests were made to determine the speed at which rail damage would be produced by the class J3a 4-6-4 type locomotive with a main wheel overbalance of 100 lb. Slipping tests at train speeds of from 61 to 82 m.p.h. with maximum slipping speeds from 123 to 134 m.p.h. indicated that no rail damage developed of sufficient importance to necessitate rail removal. The New York Central slipping speeds were considerably higher than the New Haven and indicated that lightweight reciprocating parts, reduced dynamic augment, lowered unbalanced reciprocating weights and heavy rail had a distinctly favorable modifying influence on high-speed locomotive operation. No modification was made in the balancing of these locomotives as a result of the tests.

Tests made on the Santa Fe with 4-8-4 type locomotives resulted in rail damage at speeds of about 97 m.p.h. These tests, however, were all made on yard track and did not represent main-line conditions.

It was apparent from the tests made on the three

Fig. 1—The Running Gear of One of the Burlington 4-6-4 Type Locomotives Used in the Slipping Tests Showing the Markings on the Wheels, the Speed Indicator Drive and Photographic Lighting Equipment. The Motion Picture Camera Mounting Is Shown in Fig. 2





**Fig. 2—The Motion-Picture Camera Equipment Was Mounted on a Folding Platform Just Ahead of the Cylinders—This Is the Right Side Installation with Both the 100- and the 400-Frame-Per-Second Cameras**

above-mentioned roads that the photographic method used was inadequate for a detailed analysis of the action of main driving wheels on the rail, the tests in each case having been photographed with 16 mm. cameras on the ground. As a result, an improved installation of photographic equipment was developed which was used in the later tests on the Burlington.

#### Burlington Slipping Tests

The Burlington tests to determine the speeds at which rail damage may occur involved the testing of six locomotives as follows: Three 4-6-4 type passenger locomotives; two 4-6-4 type passenger and freight locomotives, and one 2-10-4 type freight locomotive.

A summary of the tests on the Burlington is shown in Table I. The tests were made on a specially prepared

about seven rail lengths to Station 19. In several tests the length of this greased section was increased. Deflection gages were located between ties from Stations 31 to 35 to indicate maximum rail deflection. Additional gages located on each tie between Stations 44 and 45 indicated rail and tie deflection.

The train speed was determined from gages located in the dynamometer car and locomotive cab, and the driver slipping speed was obtained electrically by means of a Weston generator drive connected to the rear driver. An indicating device located on the side of the locomotive showed throttle position. All driving-wheel tires were painted with distinguishing black marks on a white background at 45 deg. intervals around the tires. A white line was painted on the counterbalance diametrically opposite the crankpin. The end of the crankpin was painted white.

The camera equipment, furnished through the courtesy of the Eastman Kodak Company, consisted of two 100-frame-per-second motor-driven cameras located on platforms on each side of the locomotive just ahead of the cylinders and about one foot above the rail. In addition a third camera operating at 400-frames per second was mounted on the right side. The test train consisted of five or six steel cars usually made up of one baggage car, one dynamometer car and three or four coaches.

In the conduct of tests, the train approached the greased section at a uniform speed as given in Table I. The throttle was left open beyond the end of the greased section for sufficient time to bring the slipping speed up to near the desired value which occurred in many tests at about Station 70, or about 800 ft. beyond the beginning of the greased section.

Determinations of the value of the modulus of elasticity of the track support was made over a length of track where the drivers lifted off the rail. These values were found to vary from 1,060 to 3,460 lb. per in. A summary of the results of the tests is shown in Table II. In all of the tests the lifting of the driving wheels was confined entirely to the main pair of wheels. The suggested explanation for this action at the test speeds is that the actual overbalance in the main wheels is always higher than at any other pair and the unsprung weight

**Table I—Slipping Tests Made on C. B. & Q. Locomotives**

No.	Kind of Locomotive Type	Locomotive Tested Class	Driver Diameter, in.	Test speed, m.p.h.		Length greased section, ft.	Dynamic augment Main driver*	
				Train speed	Max. slip speed		Diameter speed, lb.	Max. slip speed, lb.
3012	S-4	4-6-4	78	56	98	230	14,111	27,053
3001	S-4-A	4-6-4	78	66	108	230	21,600	41,400
4003	S-4-A	4-6-4	78	47	88	230	14,111	23,193
				67	98	230	21,600	35,500
				70	100	230		
				72	112	300		
				78	123	300	4,596	12,377
6314	M-4-A	2-10-4	64	81	128	504	8,480	22,800
5604	O-5	4-8-4	74	51	80	504	11,315	17,680
				53	80	230	15,430	24,100
				67	93	230		
				74	102	230	6,000	11,850
				80	104	230	12,930	25,570
5623	O-5-A	4-8-4	74	78	111	300	5,520	13,330
				80	115	300	11,500	27,700

\* The first value given is calculated using conventional overbalance in counterbalance plan and second value is actual dynamic augment in plane of rail; the difference being the error in using the conventional overbalance weight and differences in planes.

5½-mile section of main-line track located about 10 miles west of Aurora, Ill., on the Chicago-Omaha line. The rail was 100-lb. RA rail on chat (lead ore) ballast. The test section was located on a fill varying from about 6 to 12 ft. deep. Station number plates reading from 0 to 50 were located on the ends of ties at approximately 12 ft. spacing on both sides of the track for a distance of 900 ft. The heads of both rails were greased with rail flange graphite grease starting at Station No. 0 and extending

of the main pair of wheels is from 5,000 to 8,000 lb. greater than in any other pair. The location of the counterbalance in all tests was found to be in the up position when the wheel was a maximum distance off the rail. It is apparent from a study of the pictures that once the wheel starts lifting it is off the rail more than it is on, so that the counterbalance may be in almost any position, depending upon the degree of lift.

Due to the see-sawing action of the pair of wheels

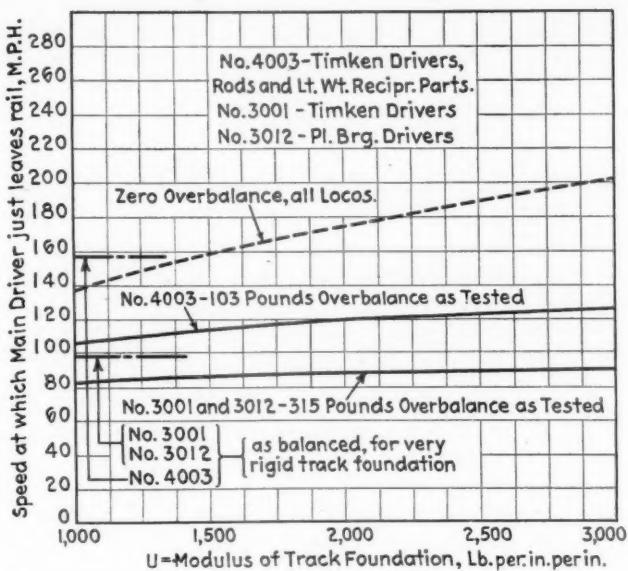


Fig. 3

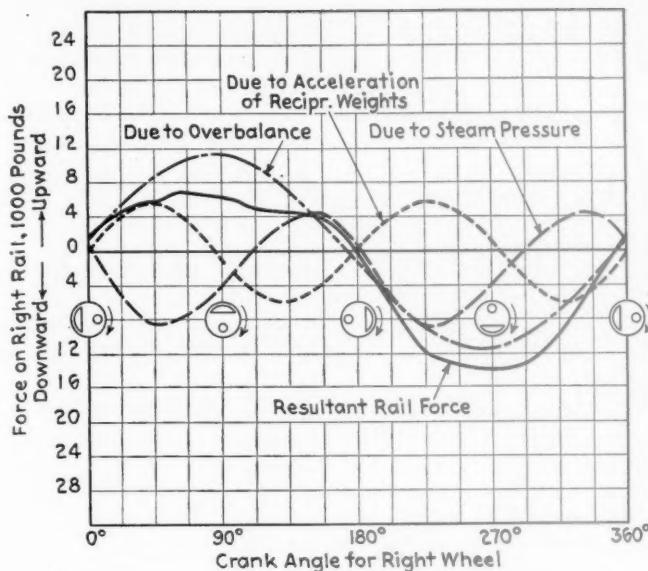


Fig. 6

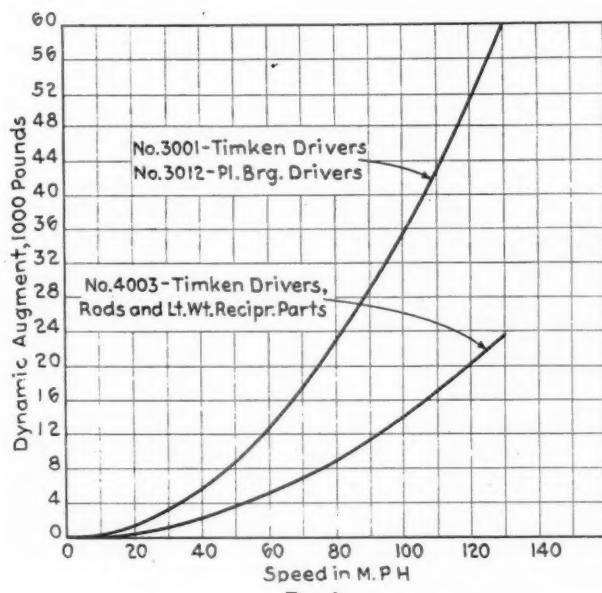


Fig. 4

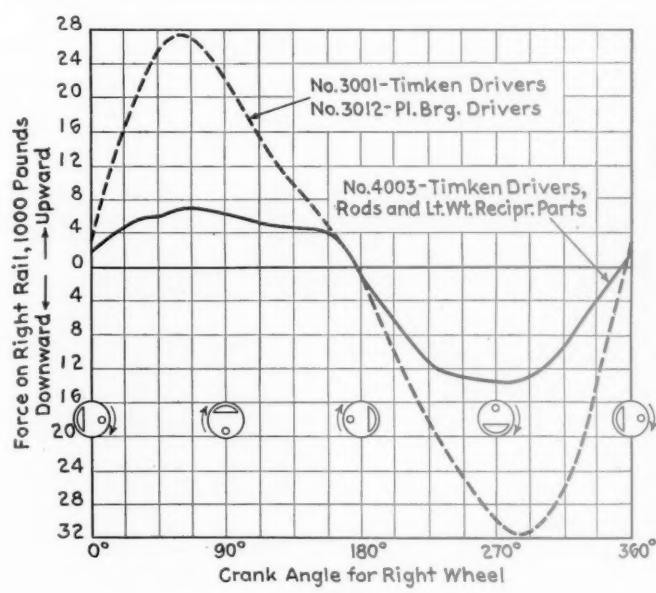


Fig. 7

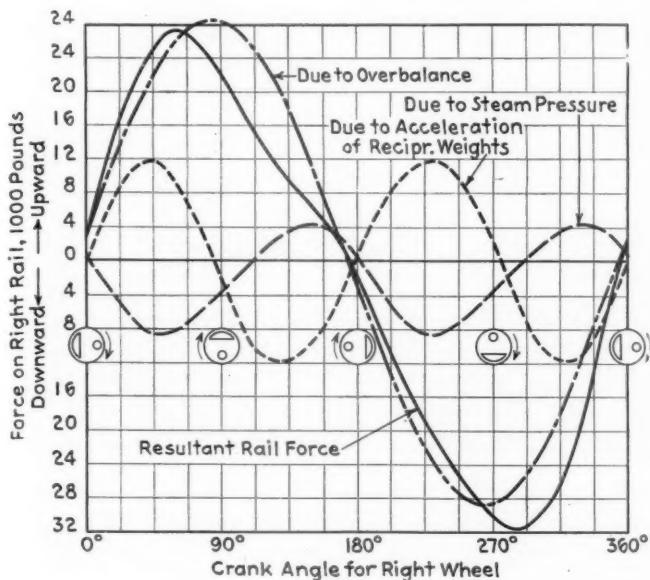


Fig. 5

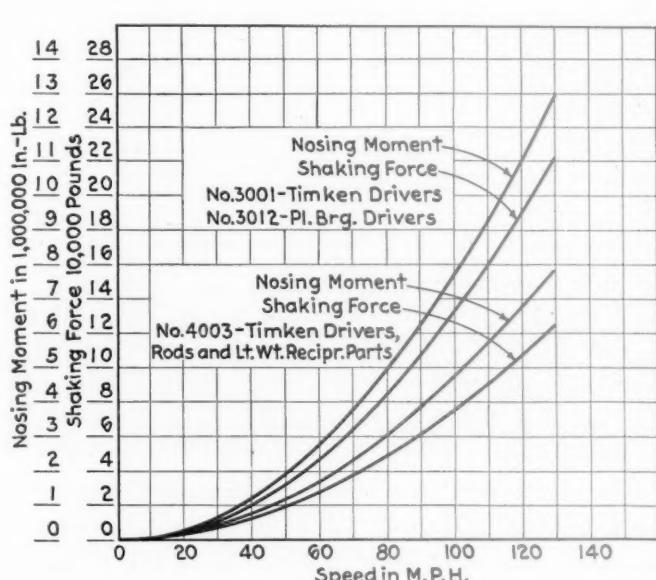


Fig. 8

across the rail as it vibrates up and down on the rail, the plane of the wheel is inclined to the rail instead of being vertical. This action may have some significance from the standpoint of what is happening in driving wheel fits on axles; stresses leading to failure of wheel centers; axle stresses and failure in wheel fits; misalignment of driving rods from their normal plane of operation, and probable momentary transfer of tremendous forces to the drivers other than the main in case of the application of sand.

The speed at which the driving wheel just begins to leave the rail is taken from pictures where the first evidence of an intermittent puff of smoke or fire is observed between the wheel and the rail. This occurs when the counterbalance is in the "down" position adjoining the rail. This is an indication of a great change in wheel-rail pressure taking place and was the only means of determining just when the wheel started to leave the rail. Above this speed the wheel lifts off the rail an increasing amount as the speed increases and goes into violent vibration. It is in this latter speed range when rail damage may be produced although between these two speeds a number of marks of various degrees are produced on the rail.

#### 4-6-4 Locomotive Tests

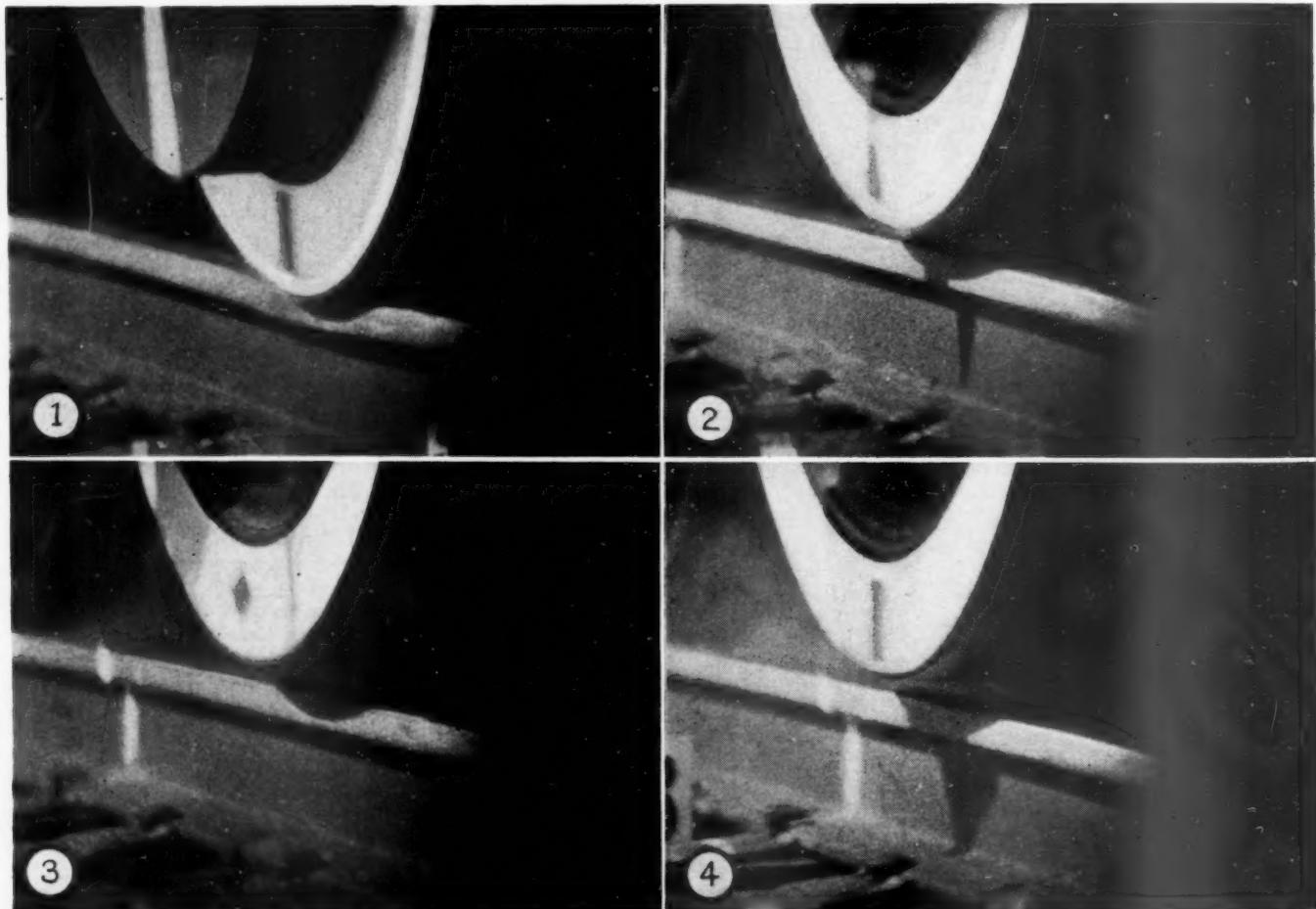
No rail damage sufficient to require replacement occurred in these tests with the exception of the first 4-6-4 locomotive tested, No. 3012, at a slipping speed of 108

m. p. h. Here 39 rails required replacement, the worst kink being  $\frac{1}{8}$ -in. deep as measured over a length of 3 ft. In this test there was a total of 70 impressions on both rails which were produced when the wheel came down and struck the rail, and of this total 53 were on the right and 17 on the left rail. These so-called rail impressions varied from 12 in. to 52 in. in length. The depth of these impressions varied from just being visible marks to actual kinks and the breaking of the scale on the web of the rail.

This same locomotive was also tested at one lower slipping speed of 98 m. p. h. and at this speed it was considered as having lifted slightly.

Locomotive No. 3001, which was essentially the same as No. 3012 with the exception that all drivers were equipped with roller bearings instead of plain bearings as on No. 3012 and both engines had heavy reciprocating parts and 315 lb. overbalance, was tested at slipping speeds of 88, 98 and 100 m. p. h. The performance at these speeds was comparable to the No. 3012. Tests on these two locomotives made it apparent that the application of roller bearings on the driving axles had no practical influence on the speed at which the wheels would leave the rail.

Locomotive No. 4003 was used in the third test and the important difference of this engine over Nos. 3012 and 3001 was that the reciprocating weights totalled only 1,026 lb. compared to 2,109 lb. In addition, roller bearings were applied on all drivers including roller-bearing crankpins and lightweight driving rods. Three slipping



**Fig. 9—Enlargements Made From 16-Mm. Movie Film Taken at 400 Frames Per Second (25 Times Normal Speed).**

Burlington 4-6-4 type locomotive No. 3012 equipped with plain bearing driving axles and having 2,109 lb. weight of reciprocating parts per side with 315 lb. overbalance. The white vertical line on the counterbalance is diametrically opposite the main crankpin and does not indicate the center of gravity of the balance. In the above pictures the position of the balance is given with reference to the vertical line to the rail and the white line. Picture No. 1 shows the counterbalance down and the crankpin up; No. 2, counterbalance 90 deg. from vertical; No. 3, counterbalance 45 deg. from top vertical, and No. 4, crankpin down and counterbalance on top vertical.

tests were made at 112, 123 and 128 m. p. h. and the main driving wheels lifted off the rail  $\frac{3}{4}$  in. at 128 m. p. h.; this compares with  $\frac{7}{8}$ -in. lift on No. 3012 at 108 m. p. h. The important difference of this test of No. 4003 over No. 3012 was that no rail damage resulted

conditions permit. This engine satisfactorily makes the schedule with trains as heavy as 23 passenger equipment cars. It is an outstanding performance and illustrates in marked fashion the wide field of usefulness for heavy eight-coupled locomotives equipped with proper balance

**Table II—Comparison of Actual With Calculated Speeds at Which Main Driver Leaves Rail**

Locomotive Class	Number	Reciprocating weight per side, lb.	Overbalance, lb.	Train speed entering greased section	Speed At Which Main Driver Just Leaves The Rail, m.p.h. Calculated values			Slip speeds at which locos. were tested and observations as to main wheel lift off rail	Rail damage requiring replacement	Permissible maximum locomotive road speeds
					Due to vibrations, track modulus 1,500 lb. per in. per in.	Due to inertia effects of overbalance				
4-6-4	3012	2,109	315	56 66	86	99	98-Lifted slightly 108-Lifted $\frac{1}{8}$ in.	None	75	
4-6-4	3001	2,109	315	47 67 70	86	100	88-Intermittent puff smoke—believe just lifting 98-Lifted slightly 100-Lifted slightly 112-Intermittent puff smoke—believe just lifting 123-Lifted slightly 128-Lifted $\frac{3}{4}$ in.	None	75	
4-6-4	4003	1,026	103	72 78 81	114	158	93-No smoke or lift visible 102-No smoke or lift visible 104-Smoke visible—believe lifted slightly 111-Lifted slightly 115-Lifted about $\frac{1}{2}$ in.	None	No limit	
4-8-4	5604	2,480	125	67 74 80	94	120	80-Lifted slightly	None	75*	
4-8-4	5623	1,378	115	78 80	97	127	80-Lifted slightly	None	No limit	
2-10-4	6314	2,453	175	51 53	79	96	80-Lifted slightly	None	60	

This speed applies to a locomotive like the 5604 with conventional overbalance of 310 lb. \*

on any of the tests of No. 4003. At 112 m. p. h. there were indications that the wheel was just beginning to leave the rail. This compares with 88 m. p. h. found on Nos. 3012 and 3001, an increase of 27 per cent in speed.

Explanation as to why rail damage did not occur in this test may be found in the fact that No. 4003 wheel overbalance constituted a hammer having 103 lb. weight while No. 3012 had 315 lb. Consequently, the impact of this smaller hammer was not sufficient to cause rail damage.

#### 4-8-4 Locomotive Tests

Two 4-8-4 locomotives with approximately the same overbalance, but differing in that No. 5623 had 44 per cent less weight of reciprocating parts than No. 5604, were tested. No. 5604 at slip speeds of 93 and 102 m.p.h. showed no wheel lift, but at 104 m.p.h. it was believed to have lifted. At the time this locomotive was tested it was believed that the main overbalance was 310 lb., but, since the test results did not develop as anticipated and in line with the other locomotives, it was decided to weigh the overbalance after completion of the test, when it was found actually to be 125 lb. With the large percentage of unbalanced reciprocating weights this locomotive proved to be a very bad rider at these test speeds and the general vibration of the entire locomotive was so severe that the focal setting of the camera lenses was disturbed during the test run. As a result, the pictures were slightly out of focus on all three tests which never happened on any of the other locomotives tested. The clarity of the pictures is such that it is difficult to determine the intermittent puffs of smoke usually expected and the observations in Table II involve some doubt.

No. 5623, with lightweight reciprocating parts, was slipped at 111 and 115 m.p.h. without rail damage. Normal riding characteristics were observed at these speeds in comparison with the poor qualities of No. 5604 to the extent that No. 5604 could not be used at such speeds in road service. It is interesting to note that two of these locomotives save approximately \$503 per day in operating expense by doubling the North Coast Limited and the Empire Builder between Aurora, Ill., and St. Paul, Minn., a distance of 402 miles, when normal train-heating

following the use of lightweight reciprocating parts permitting their operation at passenger-train speeds.

#### 2-10-4 Locomotive Tests

The 2-10-4 locomotive tested is a heavy freight engine designed originally for hauling coal over the Beardstown division from Southern Illinois to the Chicago district. Two slip tests were made at 80 m.p.h. which showed the wheel lifting slightly.

The movie shows relatively smooth operation of this large locomotive at the slipping speed of 80 m.p.h. and illustrates the wide value of usefulness for this heavy type of locomotive when equipped with the speed-raising factors of lightweight parts in connection with stabilized lateral motion following the use of roller bearings.

#### Effect of Overbalance on Wheel Lifting

An analysis was made of the influence of the various factors which would cause forced vibrations of the driving wheel on the rail. Such calculations may enable one to predict the critical wheel speed as well as to give a rational explanation of the test results. Table II shows the results of this study for the six locomotives tested and Fig. 3 shows typical curves. The mathematical basis for these curves is given in an appendix of the paper showing that the vibration of the locomotive is treated as a system having a single degree of freedom for the simple case of springs interposed between two masses which operate on a second set of springs. One of these masses is the sprung weight which is the boiler, frame, etc.; the second mass is the unsprung weight of the driving axle assembly. These two masses are separated by driving springs and this unit is supported on the track structure which is considered here as an elastic foundation functioning as springs. This system has certain critical frequencies and if the driving wheels rotate near such critical speeds then forced vibrations will be produced by the overbalance. It is realized that these ideal assumptions are not fully realized in the case of actual locomotive operating conditions, but until further data are available this method of analysis presents some very interesting data which will now be discussed.

The speed at which the main driving wheel should leave the rail for various moduli of track structure is

shown in Fig. 3 for all three 4-6-4 locomotives tested. The lower full-line curve shows the wheel for Nos. 3012 and 3001 having 315 lb. overbalance as lifting at 86 to 90 m. p. h. for a track modulus varying from 1,500 to 3,000 lb. per in. per in. If the track were considered very rigid so that no vibration phenomena were present, then the inertia effect of overbalance would cause the wheel to leave at 99 m. p. h. as indicated in Fig. 3. Similar comments may be made of the upper full line curve for No. 4003 where the wheel is shown leaving the rail at 114 to 128 m. p. h., while if the inertia force of the overbalance were considered as a criterion, then the wheel would not leave until 158 m. p. h. The upper dotted curve predicts the condition for zero overbalance which was not tested.

A comparison of these calculated speeds at which the wheel leaves the rail is shown in Table II with the observed values from test.

Several general deductions which may be observed from this study are:

- (a) When the overbalance is large, such as 315 lb., then the stiffness of the track has very little influence on the speed at which the driver leaves the rail.
- (b) As the overbalance approaches zero the value of the stiffness of the track becomes more important but such high allowable speeds are not of immediate interest.
- (c) Vibration phenomenon in many cases causes the wheel to lift off the rail within present locomotive operating conditions and at a speed much less than that required for the inertia force of the overbalance to be equal to the wheel load.
- (d) Reduction of overbalance is a more important factor than increased track stiffness to permit higher operating speeds—this does not mean that heavier track is not desirable in order to reduce track stresses.
- (e) A decrease of 1,000 lb. in the unsprung weight of the driving axle with 200 to 300 lb. overbalance would increase the speed at which the wheel leaves the rail by about 3 to 4 m.p.h.—this is not shown by these curves but may be determined using calculations in the appendix.
- (f) More fundamental test data are necessary for the general application of vibration theory in practice, but indicated procedure gives results in good agreement with test values as shown in table.

#### Main-Rod Error in Counterbalance Calculations

It is now customary in counterbalance calculations to consider the scale-pan weight of the back end of the main rod as rotating and the front-end weight as a portion of the total reciprocating weights. This procedure has existed for many years, although Henderson, in 1907, in his book, "Locomotive Operation," page 57, recognized that the proper division of back- and front-end weight requires a determination of the radius of gyration. He suggested that the radius of oscillation be found experimentally by swinging the rod as a pendulum. His practical conclusions for main-rod designs prevailing at that time were "one-half of the weight of the main rod is not far wrong for an approximation as to the balance needed to be added to the main wheel, considered as acting at the crank-pin radius."

This discrepancy between the existing procedure and the recommendations of Henderson introduces considerable error in the counterbalance statement of locomotives. Unfortunately, this error is in the wrong direction in that the overbalance in the counterbalance plane is actually higher than that given by the usual counterbalance statement.

The actual error in the plane of counterbalance for the back end of the main rod and the corresponding increase in dynamic augment at diameter speed above

the usually calculated value for the respective cross-counterbalanced engines is:

Locomotive	Main-rod error, lb.	Increased dynamic augment, lb.
3001-3012 .....	107	4,800
4003 .....	78	3,500
5604 .....	131	5,100
5623 .....	112	4,300

The above statements are based on pendulum tests of the main rods on the 4-6-4 and 4-8-4 locomotives used in these slipping tests. Here it was found that seven-eighths of the scale-pan weight of the back end of the plain-bearing main rod should be considered as rotating weight, and on roller-bearing rods a ratio of 0.82 was ascertained. For this reason, the counterbalance record in Table III gives the usual statement of balance along with the corrected values. These corrected values are the basis of all calculations in this paper unless specified, although, where reference is made to overbalance in either the text or in curves, the conventional overbalance value is stated.

#### Vertical Rail Forces Under Main Wheel

Dynamic augment due to overbalance is the usual variable force calculated as acting on the rail, but there are two additional rail forces which are present and sometimes of considerable importance, but very seldom, if ever, considered. These two forces are a function of the



Fig. 10—An Example of Rail Damage—This Rail Kink Measured 0.125 In. in Depth

angularity of the main rod and produced by: (a) Piston thrust values from indicator card, and (b) inertia of reciprocating parts. It is the combination of these two forces with that of the dynamic augment which are calculated here for the six locomotives tested and may be considered as the three principal factors constituting a resultant variable force on the rail. This resultant must be added to the static wheel load, plus any forces due to locomotive oscillation, vibration (impact factor), etc., and does not take care of additional forces due to irregular track, out-of-round wheels, etc., or the correction for wheel arrangement and spacing.

These calculated forces are shown for all three 4-6-4 locomotives in curves of Figs. 2, 3, 4 and 5. The maximum dynamic augment due to overbalance for various locomotive speeds is shown in Fig. 2, while Figs. 3 and 4 indicate how the three forces and their resultant varies during one revolution of the driving wheel. Fig. 5 compares the resultant rail forces shown in Figs. 3 and 4 for the cases of locomotives No. 3012 and 3001, having conventional weight of reciprocating parts and overbal-

ance, with No. 4003, which has lightweight reciprocating parts and low overbalance. The effect of the unbalanced reciprocating weight in producing shaking forces in the fore and aft directions as well as nosing or turning moment of the locomotive on the rails is shown in Fig. 6. In this the influence of tractive force at the wheels is neglected.

[Note—Similar studies to the above for 4-6-4 locomotives were also included for the 4-8-4 and 2-10-4 type locomotives. The charts for the latter two types are not reproduced.—Ed.]

Commenting on all these curves, it should be noted that as a result of about 50 per cent reduction in reciprocating weight and lower overbalance a much more favorable condition on track and locomotive is obtained as follows:

(a) Reduction of 60 per cent in dynamic augment is obtained on the 4-6-4 (Fig. 2) and 75 per cent on the 2-10-4 locomotives.

(b) Even though the overbalance is decreased, the unbalanced forces producing shaking and nosing moment are at the same time decreased about 40 per cent for the 4-6-4 (Fig. 6) and about 25 per cent for the 2-10-4 locomotives. Decreasing the overbalance in itself without decreasing reciprocating weight will increase the unbalanced disturbing forces such as shown in Fig. 6. There is a limit to which the unbalanced forces on conventional engines may be increased to give good riding qualities of a locomotive and minimum cost of track and locomotive maintenance, all of which are unknown factors from a stand-point of dollar value.

(c) Resultant variable rail force for 4-6-4 locomotives (Fig. 5) shows a favorable reduction of about 55 per cent in the downward, and 75 per cent in the upward directions to give a 65 per cent less overall change in variable rail force.

(d) Resultant variable rail force for the 2-10-4 locomotives (curve not shown) shows a favorable overall reduction of about 68 per cent. This modified M-4-A was not tested, but is under construction, and it will be interesting to observe its service performance in view of its being underbalanced as calculated by conventional methods.

(e) With about the same overbalance on the two 4-8-4 locomotives the dynamic augment is about the same, but, due to the 44 per cent lower weight of reciprocating parts of No. 5623 compared with No. 5604, the resultant rail force is about 25 per cent less in the downward, and 40 per cent less in the upward, direction to give about 30 per cent less overall change in variable rail force.

(f) Of the two 4-8-4 locomotives having about the same overbalance, No. 5623, with 44 per cent lower reciprocating weight than No. 5604, gives about 35 per cent less disturbing force and should be a much better riding engine, as was found on the test.

(g) The frequency of the rail force components due both to piston thrust and inertia of reciprocating parts is twice that of the dynamic augment, as indicated for example in Figs. 3 and 4. For this reason their effect (neglecting that they do not vary according to a sine law) in causing vibrations at the test speeds is of much less importance than the dynamic augment.

(h) Large variations in wheel pressure and the large magnitude of the shaking forces and nosing moments given in all these curves may be suggested as being partially responsible for intermittent slipping of drivers to the extent that it affects the frictional coefficient between the wheel and rail.

It is appreciated that the above analysis is based on calculations, although only fundamental principles of mechanics are applied. The procedure used requires much additional study in correlation with further locomotive and track tests.

#### Permissible Locomotive Operating Speeds

Following these tests it was necessary to establish maximum safe operating road speeds from the stand-point of rail damage for locomotives of the classes tested. Such speed was determined from a study of: (a) The slipping test speed at which the main driving wheels started to leave the rail; (b) the speed for which the

dynamic augment was equal to 50 per cent of the static wheel load, and (c) the speed at which the calculated rail stress would be about 30,000 lb. per sq. in. It was considered that a compromise maximum speed for locomotive operation could be selected from these three criteria which would not cause rail damage. On this basis, the maximum road speeds were specified as in Table II which indicates the increase in allowable speed permitted on those locomotives equipped with light-weight reciprocating parts over those having conventional weights. In order to make train schedules, however, it is necessary to exceed the speed values given in the table by about five miles an hour.

#### Method of Obtaining Light Reciprocating and Rotating Weights

The material used in these parts has the trade name of Timken high dynamic steel. All parts are steel, except for the use of an aluminum crosshead shoe.

All parts are heat treated and are either die forged, rolled, or steel tubing, with the exception of crank pins which are hammer forgings. Particular emphasis is placed on proper grain flow for maximum strength. In addition to using a material having over twice the static strength of the usual steel used for this purpose, important consideration is given to the shape of the various design members so as to give the proper distribution of metal for maximum strength with minimum weight.

#### Future Locomotive Design

General conclusions from this paper indicate that many new problems are associated with high-speed locomotives. It is believed that the application of lightweight parts both to the reciprocating and rotating parts will be an essential modification required on high-speed steam locomotives not only for satisfactory operation of the locomotive, but also because of the effect such operation will have on existing and even greatly improved track and bridge structures.

While it is not difficult to obtain agreement that such weight reductions are desirable, there may be some questions as to whether satisfactory designs are available, and operating performance records indicate the advisability of making such departures from conventional practice. The answer to these questions may be found from the record of 64 locomotives which are in operation over several railroads in the heaviest and fastest passenger and freight service where the total accumulated service is 9,000,000 miles. All of these locomotives have lightweight reciprocating parts and 14 have, in addition, lightweight rods and roller-bearing crank pins. These 14 engines have a total accumulated mileage of 1,700,000 miles. New applications being built or just placed in service also total 14 locomotives.

The usual price of pioneering has been experienced in this field of lightweight parts in that failures have occurred. This development generally has been extremely encouraging, and in this respect much credit is due those railroads which have contributed toward its success.

RECALLING OUR OWN HOCH-SMITH RESOLUTION of 1925 which called for lower rates on agricultural products, the Public Works Ministry of Chile has ordered a reduction of 50 per cent in freight rates charged by the State Railways in the country on carload rates of wheat and flour to any station on the northern or southern divisions. Enacted to provide cheaper provender for the country, the reduced rates are to be effective from February 15 to December 31.

# R. E. A. Gets Rate Increase

I. C. C. grants authority for both upward and downward revision of express rate structure—Expected to yield \$10 000,000

WASHINGTON, D. C.

**F**INDING that an ample showing had been made that there has been an increase in the total cost of performing express transportation in recent years, and more particularly since the latter part of 1937, the Interstate Commerce Commission, on February 24, granted the Railway Express Agency authority so to revise its rate structure as to increase its revenues by \$10,000,000, according to estimates submitted to the commission by company executives. The resulting readjustment of the express rate structure will involve both decreases and increases with the R. E. A. expecting an increase of \$5,000,000 on present traffic and a like amount on new small package business which it expects to attract because of reduced rates. The express company's petition was granted in toto with the single exception that in the case of rates on agricultural commodities, the commission insisted that authorized increases shall be applied only to the seasonal rates and not to the higher permanent rates.

## Eastman Dissents in Part

Commissioner Porter went along with the majority, but wrote a separate concurring opinion in which he approved the ruling regarding agricultural rates. Commissioner Lee, concurring in part, did not agree with the majority's belief that the express company should abstain from publishing temporary seasonal rates on agricultural commodities. Commissioner Eastman dissented in part, and wrote a lengthy opinion in which he cast doubt upon the feasibility of the express company's proposition to decrease the rates on small packages in an effort to get directly the business now handled through the New York City package consolidators. Commissioner Splawn endorsed Commissioner Lee's views while Commissioner Rogers joined with Commissioner Eastman in a condemnation of the reduced rates.

Generally, the commission finds that the company's wage costs and taxes have risen along with those of the railroads and that, because of this, it is logical to authorize an increase in express rates corresponding to that approved for railroad freight rates, "not only for the purpose of providing revenues adequate for the maintenance of express service but also to preserve the general relation between freight and express rates." The commission points out that for similar reasons general increases in express rates were permitted in 1918 and 1920.

## Commission Is Not Persuaded

On the question of whether or not shippers will be able to bear the proposed increases and whether or not certain commodities will be diverted to other forms of transportation, the commission says that, "There appears to be some ground for doubt whether certain commodities will continue to move in express service under the proposed rates. We are not persuaded, however, that we should disapprove the proposed increased rates either in part or in whole because of that doubt. The result can be ascertained only by experience."

Also, the commission is unable to conclude that the

R. E. A.'s proposals will throw an undue burden on agriculture, as had been contended at the hearings. It is admitted that much of the opposition to the proposed increases came from agricultural interests and related in large part to the carload rates, but the commission believes that the carload express movement of agricultural products "appears to be declining for various reasons, principally because of the improvement in railroad and motor freight service." It is the opinion of the commission that the use of carload express service seems to be confined to time when speed is essential and marketing conditions are such as to make it profitable to the producer to pay for the expedited service.

Coming to the question of increased express rates on agricultural products, the commission finds that the present carload rates on deciduous fruits have been in effect for some 15 years and that there is no movement under these so-called paper rates. In practical effect, it is found that they have been replaced by "temporary" rates published for a number of years at the beginning of each shipping season and discontinued at the end of the season. "Under the circumstances," says the majority decision, "the permanent rates may be deemed obsolete, and no useful purpose would be served by modifying the outstanding order to permit an increase."

## Calls Seasonal Rates Unsatisfactory

Continuing this line of discussion, the commission says that the practice of publishing seasonal rates is an unsatisfactory one because it causes uncertainty as to the level of rates to be applied during the shipping season. Also, it is objected that this practice is made more unsatisfactory because it is difficult to time the publication of the rates with the maturity of crops, which is subject to varying conditions frequently of sudden occurrence.

"In the interest of stability of rates and the convenience of shippers," continues the commission decision, "we strongly suggest that applicant discontinue its practice of canceling periodically at the end of each shipping season its so-called temporary rates, which have come to be generally recognized as necessary for the movement of traffic, and to maintain those rates on a continuing basis rather than as merely seasonal rates. Our approval of the increase is limited by the exception indicated, that in increasing its rates as herein authorized, applicant should use as a maximum base the rates which it has established and maintained to move the seasonal traffic during the normal period of movement, and not the rates which chance to be in effect at the date of this report, when the movement is nominal or comparatively negligible."

That phrase of the express company's petition asking for a reduction in the rates on small packages was intended to regain for the express company a portion of the business now handled by several New York package consolidators.

## Example of Consolidation Saving

The commission's decision gives a typical example of how these consolidators save money for their clients

who are usually the consignees in cities other than New York.

At present the charge on a package shipped from New York to Chicago weighing 10 pounds is 69 cents first class and, if 10 such packages are sent separately to a Chicago merchant, the total cost is \$6.90. By having these packages sent as a single 100 lb. shipment the consignee may obtain the application of the 100 lb. rate of \$3.80 from New York to Chicago. The charge of the principal packing companies engaged in the business of consolidating small packages is seven cents for each such package, and the addition of 70 cents would bring the total cost to \$4.50. The saving to the Chicago consignee is thus \$2.40 on the shipment. Under the new rates the rate for a 10 lb. shipment from New York to Chicago will be reduced to 65 cents, and the 100 lb. rate will be raised to \$4.18.

The saving through consolidation of 10 individual 10 lb. packages would be reduced to \$1.62.

The package consolidators contended before the commission that although the express company might get more business by the reduced rates, yet it would lose in the long run because the cost of handling the new business would be greater than the income derived from it. The commission is loathe to believe this contention, saying that it places more faith in the estimates of the express company. "Such evidence as we have," says the decision, "indicates that there will be an increase in tonnage and that the cost of moving it will not entirely absorb the additional revenue. Despite the lack of evidence to support any more definite finding on this point we believe that applicant should be permitted to establish its proposed reduced rates in order that the effect may be tested by actual experience. As a condition of our approval to its proposals, however, we shall require applicant to make another test covering four representative days within six months after the new rates have gone into effect, which will show the revenue effect of the increased and reduced rates published under authority of our findings herein. The results of that test should be made available for our consideration and that of interested parties."

#### No Condemnation of Seasonal Rates

Commissioner Porter, after a discussion of agricultural rates, goes on to say that "Our suggestion to applicant with respect to seasonal rates is in no sense a condemnation of rates published with expiration dates. Nor is it intended to discourage experimentation on the part of applicant for the purpose of determining what rates will move traffic. The suggestion is largely an admonition that applicant reconsider what seems to have become a rather definite policy of periodically canceling and republishing rates on certain traffic of a seasonal character which do not vary substantially from season to season. This policy seems undesirable from several different standpoints, notably that of the shipper who is left in doubt as to whether the seasonal rates are to be re-established and if so, whether they will be available to him when his particular shipments are ready to move. A suggestion that the applicant do something to remedy this situation is within our province."

Commissioner Lee, whose remarks are concurred in by Commissioner Splawn, points out that the express movement of agricultural products has been declining for the past several years due to improved rail and truck service. Agreeing to all parts of the decision except that affecting agricultural products, Commissioner Lee feels that the record is convincing that the proposed increases, especially on fruits and vegetables, will result in the di-

version of additional tonnage to other modes of transportation.

"That the express rates on agricultural products already are higher than the traffic will bear is demonstrated," says the commissioner, "by the fact that the express company for some years has deemed it necessary to put into effect so-called seasonal or temporary rates considerably lower than the normal rates in order to hold a share of the traffic. Ordinary common sense would seem to dictate that, under the circumstances, the express company cannot reasonably be expected to increase its revenues through the proposed higher charges. Neither do I approve the suggestion that the express company should abstain from publishing temporary rates. On the contrary, it should be encouraged at all times to maintain such reasonable rates, seasonal or otherwise, as will move the traffic."

#### Eastman Objects to Reduced Rates

Commissioner Eastman would go along with the increased rates, but he does not believe that they will add to the gross revenue of the express company; he disagrees with the majority in approving the reduced rates on small packages. Discussing the latter the former coordinator asserts that "The proposal to reduce rates on packages weighing less than 100 lb. has many curious features. As the majority show, applicant would have lost \$4,004,213, if the reduced rates had been applied to the traffic of 1937. However, applicant anticipates that they will attract new traffic bringing in \$6,000,000 additional gross revenue, and that it can handle this new traffic with an increase in operating expense of only \$1,000,000, producing a gain of \$5,000,000 to offset the loss of \$4,004,213. Thus, on applicant's own figures and estimates the final net gain will at best be less than \$1,000,000.

"When these estimates are analyzed, however," continues Mr. Eastman, "it appears that they hardly reach to the dignity of a good guess. In the first place, applicant does not know how much small package business it now has, nor the average package weights. It assumes, without basis for the assumption, that the situation in these respects is now relatively the same as it was 10 years ago in 1928, when a four-day test was made. In the second place, the estimate of the additional traffic which the reduced rates will attract is purely a hopeful surmise, without supporting evidence. In the third place, applicant does not know that this additional traffic could be handled with an increase of no more than \$1,000,000 in operating expense. As the majority state, 'No cost figures are offered to support this estimate.' The \$1,000,000 is another hopeful surmise."

#### Says R. R. Are Parties in Interest

Mr. Eastman also points out that the railroads are the real parties in interest in the proceeding since they assume, under their contract with the R. E. A., the real financial burden of the express service. "It is also clear," contends Mr. Eastman, "that the railroads are at best making out of this service only a margin over 'out-of-pocket' expense, and probably not even that."

Mr. Eastman closes his dissent by warning the majority that they apparently assume, without basis, that the agencies from which the express traffic is to be diverted will take no steps to retain it. "An obvious means of meeting the situation," he concludes, "so far as the packing companies at least are concerned, is to make greater use of motor carriers."

# Omnibus Transport Bill Hearing

WASHINGTON, D. C.

JUDGE R. V. FLETCHER, vice-president and general counsel of the Association of American Railroads, completed his discussion of legislative proposals designed to implement the recommendations of President Roosevelt's railroad committee-of-six at the February 24 session of House committee on interstate and foreign commerce hearings on Chairman Lea's omnibus transportation bill. Presentations on the Lea bill were suspended this week while the committee heard evidence bearing on various House bills, sponsored by Southern and Western members desiring to effect equality in the inter-territorial freight rate structure.

Judge Fletcher's testimony subsequent to that reported in the *Railway Age* of February 25 involved his introduction and explanations of various additional sections of the committee-of-six's proposed rewrite of the Interstate Commerce Act. The completed draft of this committee-of-six bill was made public by the House committee on March 1; previously a copy had been submitted to the I. C. C. for criticism and comment.

## Fourth-Section Repeal

In urging repeal of the Interstate Commerce Act's fourth section, Judge Fletcher said that he would enter upon no elaborate discussion of that proposal which had been before the committee "many times" and passed the House on two occasions. The committee-of-six bill, the A. A. R. general counsel went on, will treat the matter by omitting the fourth section. Another way to accomplish the desired result, he added, would be to pass the Martin bill to repeal the long-and-short-haul clause, a course of action which would leave in the law the aggregate-of-intermediates provision. The committee-of-six did not feel that retention of the latter would be important because the I. C. C. has generally adopted the policy of condemning combinations of rates which are less than through rates.

There is no provision in the Lea bill for repeal of the long-and-short-haul clause; but that bill does propose to amend the fourth section so as to provide that a regulated water carrier which cuts its rates to meet railroad competition shall not be permitted to increase such rates unless the I. C. C. finds that the proposed boost rests upon "changed conditions other than the elimination of railroad competition." Judge Fletcher does not think that the foregoing would be a very important change, nor does he think that it would be effective. He went on to say that repeal of the long-and-short-haul clause is a "very important" part of the committee-of-six program; he has never been able to understand why one form of discrimination should be selected for special treatment. He has seen "all sorts of curious and irrational" things happen in the administration of the long-and-short-haul clause.

Here Chairman Lea observed that control over departures from the long-and-short-haul principle was part of the matter of controlling competitive rates. Judge Fletcher agreed, having previously observed that repeal of the fourth section would still leave the commission with all the rate powers it needed to prevent discriminations. Next, the chairman asked what considerations should determine the fixing of competitive rates by a regulatory body. The witness replied that the public is entitled to competitive rates, but that doesn't mean that

transport agencies should be permitted to "run amok." He thinks that the "out-of-pocket" cost should be an element; and how far above that an agency should be required to go represents the exercise of a "very nice discretion."

Continuing, Judge Fletcher said that differences in rates should reflect the advantages or disadvantages of shipping by one agency rather than another; and he believes that if all agencies were put on the same basis with respect to subsidies, the laws of economics should be permitted to work things out—subject to power in the regulatory body to prevent competing carriers from "making fools of themselves." He added a warning against making the test what "some bureaucrat" thinks is the full cost of a particular service—what "frightens" him is the thought that the regulatory body will undertake to assign traffic to the agency which the regulatory body thinks will get the most profit out of such traffic.

## How Halt Narrowing of Spread

Chairman Lea cited the post-1921 reductions in railroad unit costs, adding that despite such economies amounting to about a billion dollars a year the carriers are worse off. Judge Fletcher explained that such economies have been offset by increases in costs and losses of high-grade traffic; and the chairman wanted to know how such offsetting developments could be halted. The witness thought that enactment of the rate-making rule proposed by the committee-of-six would help. While he did not criticize the I. C. C. for administering the present law as they saw it, he nevertheless pointed out that such administration has got the railroads into the position where rates cannot be raised—when earnings are good the railroads are told they don't need the money, and when earnings are bad they are told that increases in rates would be contrary to the general economic trend.

Next Judge Fletcher offered that section of the proposed committee-of-six bill which would implement the recommendation with respect to reparations. He explained that it is proposed to put a six-months time limit on applications for reparations where the allegation is a departure from the published rates; the limit would be 90 days where the published rate was charged, but its reasonableness is assailed.

The A. A. R. general counsel followed with the section designed to create the five-man Transportation Board which would administer as to all modes of transportation the provisions of the act relating to certificates of convenience and necessity, the regulation of finances and consolidations. Also, the Transportation Board would take over the U. S. Bureau of Public Roads. The "fundamental thought" behind the Transportation-Board idea, Judge Fletcher explained, is perhaps the same as that which brought forth the Lea bill's provisions for a five-man Finance Division in the I. C. C. The latter, he went on, would be "pretty well independent in its creation, its functions and the matter of review." Meanwhile, the committee-of-six has "no enthusiasm" for the Lea bill's Administrator after the experience with the Coordinator; and Judge Fletcher has reached the conclusion that the Lea bill "does not contain a valuable suggestion" in the proposal to have an Appeal Division in the I. C. C.

The Transportation Board's first duty, the witness

again emphasized, would be to make studies of the proper sphere of each transport agency and of the amount of subsidies granted to the various agencies. The A. A. R., he added, had just issued "quite a monograph" on the subsidy question, his reference being to the Breed-Downs-Older study reviewed in the *Railway Age* of February 18, page 310. In Judge Fletcher's opinion the "great controversy" over alleged highway subsidies is going to center on the question of how much of the total cost should be assigned to the general taxpayer.

#### **Co-ordinator Had "Impossible Job"**

Questioned by Chairman Lea as to the co-ordinator experiment, the witness paid tribute to Commissioner Eastman, but pointed out that he was tackling an "impossible job." Every recommendation, he added, was studied by the railroads; and it was found in "nearly every case" that they were "impractical." If the power to require co-ordinations is to be anywhere, Judge Fletcher prefers that it be in the Congress; and he cited the Beaver-Mahoning waterway recommendation now before the House committee on rivers and harbors as an incident which "strengthens our contention" that the proposed Transportation Board should pass on whether projects are needed for transportation.

The A. A. R. general counsel does not think that Lea-bill proposals dealing with the regulation of water carriers go far enough; the committee-of-six prefer the set-up proposed in the Wheeler-Ramspeck bill, since some of the most important water lines operate through the Panama canal. Also, the witness told Representative Mapes, Republican of Michigan, that the bill introduced recently by Representative Bland, Democrat of Virginia, has "the infirmity" of putting the regulation of water carriers under the Maritime Commission. The committee-of-six bill would authorize the I. C. C. to exempt from regulation any water carrier which was not in competition with a railroad. With respect to the Federal Barge Line, Judge Fletcher pointed out that the Lea bill wants this government-owned agency treated the same as private carriers, whereas the committee-of-six wants it eliminated entirely. The proposed tolls for commercial use of waterways, the witness went on, should be in a "reasonable amount," and should be determined by the Transportation Board. In determining the amount of such tolls consideration would be given to prospective as well as present traffic.

Passing to committee-of-six recommendations with respect to expenditures on grade crossings and on the rebuilding of bridges over navigable streams, Judge Fletcher said that the former doesn't call for immediate legislation, although it is an important subject with respect to which he hopes Congress may adopt a "more liberal policy." His proposal dealing with the reconstruction of bridges contemplates that the expense should be divided on the basis of the benefits; and H. R. 2188 introduced by Representative Hobbs, Democrat of Alabama, has been approved by the A. A. R. as a "satisfactory measure" to effect the desired result. In this connection Judge Fletcher introduced an exhibit showing that railroads since 1917 have spent a total of \$49,209,000 for the reconstruction of bridges; if the Hobbs bill had been the law the government would have paid \$29,080,000 of the foregoing total.

#### **Land-Grant Rates**

The A. A. R. general counsel thinks that the Lea-bill proposal to require the government to pay commercial

rates is the proper approach to the land-grant-rates question; repeal of the land-grant statutes might complicate pending litigation over the grants. Meanwhile the railroads would retain authority under the Interstate Commerce Act's section 22 to make contract rates with the government. Judge Fletcher does not know of any opposition to the repeal of land-grant rates, except that of "some gentlemen in the Treasury Department who have written a book." His reference was to the pamphlet entitled "Facts Regarding Land Grants to the Railroads of the U. S.," which was reviewed briefly in the *Railway Age* of November 26, 1938, page 789. Asked by Representative Boren, Democrat of Oklahoma, if repeal of land-grant rates would not affect present business relationships, the witness replied that the existing set-up has given preferences to industries located on land-grant roads, adding that repeal might change the flow of some business but the result would be fairer.

Next Judge Fletcher offered the committee-of-six proposal dealing with railroad reorganizations. It contemplates a five-judge reorganization court, but would leave the detail of management in the District Court where the original petition was filed. Also, it would relieve the District Court from the necessity of appointing trustees if it thinks it proper to leave the property in the custody of the management. With respect to consolidations, the committee-of-six proposal provides that the only standard would be the "broad principle as to whether the consolidation is in the public interest." Also, it would include provisions for the protection of labor displaced as a result of mergers.

Continuing, Judge Fletcher discussed the belief in some quarters that the railroads don't want to consolidate and that "some fellow" ought to be appointed to make them do it. He contended that if the carriers had been left alone there would now be a great deal more consolidation, and cited the cases wherein the Great Northern and the Northern Pacific and the Southern Pacific and the Union Pacific were forced to "unconsolidate." He was not appraising these situations but he was talking of the "inconsistency" of saying that the railroads ought to be made to consolidate while federal agencies won't let them consolidate. What the latter want is "to consolidate their way."

#### **Co-ordination Can't Be Hastened**

In opposing compulsory co-ordinations, Judge Fletcher pointed out that the railroads are co-ordinating wherever such action is deemed practical. He went on to say that there are now joint operations of 24,000 miles of track, 263 engine terminals, 1,366 freight stations, 1,902 passenger stations and 618 yards; while 418 bridges are used by more than one carrier and joint inspection of freight is carried out at 1,013 points. This process "can't be hastened" by the intervention of outside agencies, Judge Fletcher said. He closed with a brief explanation of his proposal to implement the committee-of-six recommendations with respect to railroad loans from the Reconstruction Finance Corporation. Briefly the committee-of-six recommendations in this connection called for "make-work" maintenance loans on terms of "the greatest liberality" with respect to rate of interest and repayment; loans for new equipment up to the full cost thereof at a rate of interest not in excess of two per cent, with payments on principal at the option of the borrower during the first five years. The recommendation covering other R. F. C. loans called for an I. C. C. certification to the effect that the borrowers' earning power and collateral offer "reasonable assurance" of repayment.

## I. C. C. to Sift Facts on Beaver-Mahoning Canal

(Continued from page 376)

currence of the Chief of Engineers to Congress the Secretary of War also sent along a copy of President Roosevelt's memorandum to him, a copy of the letter which Chairman Frederic A. Delano of the National Resources Committee's Advisory Committee had sent to the President and a copy of the memorandum which the President sent to the I. C. C. chairman. [Quotations from Chairman Delano's letter appear in the leading editorial in this issue, which is devoted to comment upon this project.]

The President's memorandum to I. C. C. Chairman Caskie cites the above-mentioned finding of the Board with respect to freight rates, and goes on to call attention to the following additional language in the report:

At the present time the Interstate Commerce Commission does not regard cost of service as the sole and controlling factor in determining whether rates are just and reasonable (see 223 I. C. C., 637, page 737), and hence it would be illogical to consider the present rates as the cost of providing the rail service, and it would accordingly be impossible for the Board to predict the extent to which rail rate reductions will be put into effect either prior to or after the construction of the waterway. However, it is quite evident that if rail reductions are to be made, as is usually done to meet water competition, it would be advantageous to both the railroads and the United States for such reductions to be made before large obligations are incurred for construction work on the through canal.

In making his reply to the President, Chairman Caskie said that before the commission enters upon an investigation of the matter it would be necessary for it to have more facts than were contained in the President's quotation from the Board's report. Thus Mr. Caskie has asked the Secretary of War for a copy of the report, and has meanwhile brought the President's memorandum to the attention of the commission.

The President's memorandum to the Secretary of War revealed that Mr. Roosevelt shares the feeling of the National Resources Committee's Advisory Committee that "a number of broad and serious problems" have not been "adequately covered." Thus he suggested that copies of the Delano letter and of his memorandum to I. C. C. Chairman Caskie be transmitted to Congress. "In making this suggestion," Mr. Roosevelt went on, "I am not giving any formal disapproval to the construction of this canal; but I am raising certain questions which I think should be answered. Furthermore, I feel I must raise the question of priority. An undertaking to cost \$200,000,000 would necessarily push to one side a very large number of other public works which are perhaps of equal importance during the next two or three years."

The House committee on rivers and harbors has set March 28 as the tentative date for the beginning of hearings on the project. Referring to the matter at last week's hearings on the omnibus transport bill introduced by Chairman Lea of the House committee on interstate and foreign commerce, R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, said he had never heard of "such a ridiculous proposition"—that the federal government should spend \$200,000,000 of public money in order to get railroads to cut rates 29 cents a ton in a particular district. Judge Fletcher suspects that if the government would give the \$200,000,000 to the railroads involved they'd be willing to make such a cut.

## Train Connection Bus Service on Monon

ONE of the busiest buses in rail-highway co-ordinated service is that operated on train connection runs to and from French Lick Springs, Ind. This resort center is situated at the end of a branch line of the Monon, which connects with the main Chicago-Louisville line at Orleans, Ind. Through sleepers between French Lick Springs and Chicago are operated over this 18-mile branch line while daytime service is provided by a train connection bus. The Monon crosses the Cincinnati-St. Louis line of the B. & O. at Mitchell, Ind., five miles north of Orleans, and train connection service is provided for B. & O. trains as well by the Monon bus.

This bus is a 16-passenger Yellow, with ample baggage space at both front and rear. It leaves French Lick Springs at 9:05 a. m. to make connections with the northbound Monon train at Orleans, arriving there at 9:50 a. m. Leaving Orleans at 10 a. m., with passengers from the northbound train, it arrives at French Lick Springs at 10:40 a. m., leaving there at 10:50 a. m. for Mitchell, via Orleans, to meet B. & O. train No. 3. Arriving at Mitchell at 11:45 a. m., the bus returns to French Lick and leaves immediately for its second round trip to Mitchell to meet B. & O. train No. 2. The final round trip of the day is made between French Lick Springs and Orleans to meet the southbound Monon train from Chicago. Thus, with a maximum trip of 22 miles, this bus takes passengers to and from four trains daily, provides local passenger service along the branch, and makes a daily total mileage of 162 miles.

## New Book . . .

*Investment Salvage in Railroad Reorganizations*, by Harold Palmer. 136 pages. 8 in. by 5½ in. Bound in cloth. Published by Harper & Brothers, New York and London. Price, \$2.00.

That investment in the first-lien bonds of bankrupt railroads may prove to be a gainful procedure, if care is devoted to the job, is the thesis of this little book. The author, who is a practitioner before the I. C. C., points out that the present market prices of the senior securities of carriers under Section 77 or in receivership bear little relation to the actual potential yield thereon. He believes that, on the whole, the public makes far too much a bogey of the "bankrupt railroad" and proceeds to demonstrate not only that the present holders of underlying bonds of bankrupt carriers may salvage their investment with wise direction of their affairs and exercise of their privileges but that additional investment in such securities is an attractive buy at current prices.

The main thread of argument is as follows: (1) In the current trend toward a wider distribution of wealth, the possession of first-lien bonds in an essential industry like the railroad business is a relatively safe position, even in the event of government ownership; (2) current market values of railroad bonds constitute a tremendous discount compared with actual values; (3) the safeguards of Section 77 will prevent the reorganization "rackets" of the past; (4) further provisions of Section 77, together with uniform accounting procedure under the law, permit the individual holder to dig for the facts and evaluate the future as deeply as he desires.

In short, Mr. Palmer advises the investor in bankrupt railroad securities to watch the field closely, to interest himself in the reorganization proceedings, to shift his holdings to other issues in some instances, to "buy in" more heavily in others. The book is especially valuable in its analysis of fundamental values, in its interpretation of rights and procedures under Section 77 and in the citation of illustrative instances in actual reorganizations wherein individual small investors "salvaged" to their advantage.

# NEWS

## South Wins First Rate-Fight Round

Would get about all it asks if I. C. C. follows proposed report's recommendations

Just as Congressional committees were getting under way with hearings on the various inter-territorial freight-rate bills, the Interstate Commerce Commission this week received the proposed report of Commissioner Lee and Examiner Corcoran recommending that the South be given about all it asks in the so-called Southern governors' rate complaint—No. 27,746, State of Alabama, et al. v. The New York Central Railroad Company, et al. The rates on only a limited number of commodities were at issue in the proceeding wherein the complainants contended for South-North inter-territorial rates on the destination basis, i. e. on the same basis as rates on similar traffic moving within Official territory.

The Lee-Corcoran report would have the commission condemn as both unreasonable and unduly prejudicial to the South the South-North rates on nine commodities to the extent that such inter-territorial rates are upon levels higher than that on similar traffic within Official territory. The recommended finding as to undue prejudice also covers four additional commodities which are not mentioned in the finding with respect to unreasonableness. The 13 commodities thus involved are: Stoves, stone, plumbers' goods, cast iron pipe fittings, cast iron service boxes, iron body valves, fire hydrants, brass pipe fittings, brass cocks and valves, soapstone and talc, excelsior, papeteries, and chinaware. The evidence with respect to the additional commodities listed in the complaint is called "extremely meager"—insufficient to support affirmative findings.

Messrs. Lee and Corcoran have made their recommended findings general in character because they would have the commission enter no order in the first instance. "In view of the rather extensive revision which the findings require," they say in this connection, "it seems desirable from a practical standpoint that in the first instance the parties should attempt to agree upon the specific bases which are to be established, with subsequent reference to the commission of any details upon which agreement cannot be reached."

The proposed report, which occupies 96 mimeographed sheets, opens with a general outline of the issues and proceeds through discussions of the economic resources of the South and the evolution of the present

### Burlington's Ninth Zephyr Named "General Pershing"

The ninth "Zephyr" of the Chicago, Burlington & Quincy, which will be placed in service between St. Louis, Mo., and Kansas City early in April, will be named the "General Pershing," in honor of one of Missouri's most illustrious sons. The commander of the American Expeditionary Forces was born near Laclede, Mo., on September 13, 1860. His father was John F. Pershing, a section foreman on the Hannibal & St. Joe (now part of the Burlington). In addition to carrying the name, "General Pershing Zephyr," on the front, the four cars will be named the "Silver Charger," the "Silver Leaf," the "Silver Eagle" and the "Silver Star."

The General Pershing will team with the Mark Twain, also named after a Missourian, Samuel L. Clemens, in double daily operation between St. Louis and Kansas City. In addition, the new train will provide accommodations for passengers between St. Louis and Denver, Colo.

Several distinctive features incorporated in the new train were set forth in the item announcing the order on page 494 of the October 1, 1938, issue of the *Railway Age*.

rate situation to a survey of rates and conditions surrounding the movement of each of the commodities involved. Coming to the positions of the parties, the report briefs the presentations of the various complaints, defendants and intervenors as it leads up to a setting forth of the railroad attitudes. The Southern carriers, it says, "are generally in sympathy with the aims and objectives of the complainants;" while "the Northern carriers and the Northern States, commissions, commercial organizations, and shippers who intervened are a unit in opposing the complaint in all respects."

The attitude of the Southern roads is further outlined in the report as one taking the position that "Southern manufacturers of articles competitive with like commodities produced in the North are entitled to rates from the South to the North approximating the level within the North, or on such other basis as will permit the free movement of traffic." The Southern roads "have been and are now not only willing but anxious to join in the establishment and maintenance of such rates; and where

(Continued on page 398)

## Harry Holds Out A Helping Hand

Commerce secretary sees rail rehabilitation needed for national recovery

Secretary of Commerce Hopkins is "firmly convinced" that "it is difficult to hope for anything like a complete recovery in America" until the problem of rehabilitating the railroads and relating them to our present and future economy is solved. Mr. Hopkins made this and other references to the railroads in an address at Des Moines, Iowa, on February 24, when he put forth a federal program for business based on a desire "to create an environment in which private capital will be encouraged to invest."

"I feel," said Secretary Hopkins, "that competition from the highways and airways has diverted traffic from our railroads and has made the problem of rehabilitation of these roads immediate and pressing. The railroads are and must be sustained as essential arteries of commerce and must be ready for use as part of our national defense." Next came his above-mentioned reference to the need for rehabilitation and relating the carriers to the present and future economy—"not a simple matter." Indeed, he added, "it is probably one of the most difficult of all problems to solve;" but the solution "should be explored and explored at once in the interest of labor, the investor, management, and the public." Previously the Secretary had listed the railroad industry among the fields "which offer substantial opportunities for the use of capital goods;" and he was "firmly convinced that if we could find a way to break the log jam of private investment in the field of utilities, railroads, and housing, we will have gone a long way towards taking the essential steps to ultimate recovery."

What might be interpreted as a shot at such things as the subsidization of transport agencies was taken by Mr. Hopkins in another section of his address. "There is," he said, "one form of government aid to business to which I take particular exception; I have had some experience with special-interest groups seeking to obtain government favor by the application of pressure, brute or delicate. This is an inevitable characteristic of Democracy, but the fact remains that government action can only be justified when it is in the general public interest. The government should not be asked to lend its powers to the promotion of legislation designed by one group of business men seeking to profit at the expense of another group...."

## January's N. O. I. Was \$32,890,711

2.4 per cent return compares with January, 1938's \$7,144,-036 or 0.52 per cent

Class I railroads in January, had a net railway operating income of \$32,890,711, which was at the annual rate of return of 2.4 per cent on their property investment,

CLASS I RAILROADS—UNITED STATES			
	Month of January		
	1939	1938	1930
Total operating revenues .....	\$305,768,767	\$279,108,385	\$445,920,950
Total operating expenses .....	232,946,450	232,565,356	352,338,745
Taxes .....	29,086,401	28,615,863	28,939,753
Net railway operating income .....	32,890,711	7,144,036	54,645,698
Operating ratio—per cent .....	76.18	83.32	79.01
Rate of return on property investment .....	2.40	0.52	3.81

according to the Bureau of Railway Economics of the Association of American Railroads. In January, 1938, their net railway operating income was \$7,144,036 or 0.52 per cent, and in the same month of 1930 it was \$54,645,698 or 3.81 per cent.

Gross revenues for January, totaled \$305,768,767 compared with \$279,108,385 for January, 1938, and \$445,920,950 for January, 1930, an increase of 9.6 per cent in 1939 over 1938, but 31.4 per cent below 1930. Operating expenses for January, amounted to \$232,946,450 compared with \$232,565,356 for the same month in 1938, and \$352,338,745 for the same month in 1930; these January expenses were 0.2 per cent more than in the same month of 1938, but 33.9 per cent below 1930.

Class I roads in January, paid \$29,086,-401 in taxes compared with \$28,615,863 in the same month in 1938, and \$28,939,753 in the same month in 1930. Thirty-two Class I roads failed to earn expenses and taxes in January, of which 10 were in the Eastern district, 6 in the Southern district and 16 in the Western district.

Class I roads in the Eastern district for January, had a net of \$21,858,538, or 2.85 per cent; for the same period in 1938, their net was \$6,773,528 or 0.88 per cent, while in 1930 it was \$32,939,155 or 4.92 per cent. Gross in the Eastern district for January, totaled \$154,094,213, an increase of 13.9 per cent compared with 1938, but a decrease of 32.2 per cent compared with 1930; operating expenses totaled \$112,761,041, an increase of 2.7 per cent above the same month in 1938, but a decrease of 35.9 per cent below the same month of 1930.

Class I roads in the Southern district for January, had a net of \$6,110,574, or 2.81 per cent; for the same month in 1938, their net amounted to \$2,894,839, or 1.33 per cent, and for the same month in 1930 it was \$7,576,945 or three per cent. Gross in the Southern district for January amounted to \$43,029,121, an increase of 9.6 per cent compared with the same period in 1938, but a decrease of 27.7 per cent below the same period in 1930; operating expenses totaled \$31,892,600, an increase of 0.7 per cent above the same period in 1938, but a decrease of 32.6 per cent under 1930.

January net in the Western district was

\$4,921,599, or 1.27 per cent. For the same month in 1938, there was a net railway operating deficit of \$2,524,331, but in 1930, the Class I roads in the Western district had a net railway operating income of \$14,-129,598 or 2.76 per cent on investment. Gross in the Western district for January, amounted to \$108,645,433, an increase of 3.9 per cent compared with the same period in 1938, but a decrease of 31.8 per cent below the same period in 1930. Operating expenses totaled \$88,292,809, a decrease of 3.1 per cent below the same period in 1938, and a decrease of 31.6 per cent below 1930.

### Missouri Pacific to Operate Over Municipal Bridge in St. Louis

The federal district court at St. Louis has authorized the Missouri Pacific to extend its lines to operate over the municipal bridge between St. Louis and East St. Louis.

### Suspends Proposed Fare Reductions for C. C. C. Members

The Interstate Commerce Commission has suspended from March 1, until October 1, the operation of schedules proposing to establish reduced round-trip excursion fares for Civilian Conservation Corps enrollees on furlough or leave traveling at their own expense between stations in Western territory.

### New Haven Appeals Decision on Service Curtailment

The New York, New Haven & Hartford has informed the attorney general of Massachusetts that it is filing a brief with the United States Supreme Court appealing from a decision of the federal circuit court of appeals which reversed an order of the federal district court at New Haven, Conn., (which has jurisdiction over the road's reorganization under Section 77) authorizing it to abandon 88 passenger stations in Massachusetts and end passenger service over the Old Colony Cape Cod lines beyond Yarmouth and Hyannis.

### Motor Carrier Hours-of-Service Regulations

The Interstate Commerce Commission's rules and regulations governing maximum hours of drivers of common and contract motor carriers are now available in pamphlet form from the Superintendent of Documents, Washington, D. C. The price is five cents per copy. Meanwhile the commission has issued a notice to all motor carriers subject to the Interstate Commerce Act, calling attention to the regulations which became effective March 1.

The commission's final decision in this case, issued after the rehearing and reargument, was reviewed in the *Railway Age* of February 4, page 238.

## I. C. C. Criticized By Rock Island

Interlocutory decisions hit by roads' general counsel in lease and merger case

The Interstate Commerce Commission heard itself sharply criticized this week by counsel for the Chicago, Rock Island & Pacific and the Louisiana & Arkansas for its failure to issue an order in these two roads' lease and merger cases now pending before the commission so that they would be in a position to attack it in a court action. The criticism of Division 4's action came on March 1 when the full commission heard oral argument on the applications of the Chicago, Rock Island & Pacific to lease the properties of the Chicago, Rock Island & Gulf, a Texas corporation, and the Louisiana & Arkansas to acquire the properties of the Louisiana, Arkansas & Texas, also a Texas corporation.

Although Division 4 had found that the approval of both applications would be in the public interest and agreed to approve them, yet it attached to the report certain conditions precedent which the two companies would have to comply with before it would issue a formal order authorizing the lease and merger. These conditions had to do with the payment of salaries to those employees who would be displaced by the consolidation of the Texas companies into the parent companies and were patterned after the Washington Agreement signed in Washington in 1936 by representatives of the rail brotherhoods and the major railroads of the country.

After Division 4's decision in which Commissioner Mahaffie dissented, pointing out that he felt that the commission had no power under the present law to attach labor conditions to mergers and consolidations, both the C. R. I. & P. and the L. & A. appealed for a hearing before the full commission.

Marcus L. Bell, general counsel for the Rock Island, opened the argument in the Rock Island case by pointing out to the commission that his company estimated it could save between \$100,000 and \$125,000 a year by doing away with the staff of the Texas corporation and moving its accounting and clerical force to Chicago. He also emphasized the fact that the proposed action would simplify accounting procedure as at present a separate record must be kept of all Rock Island traffic entering or leaving Texas. Payrolls would also be simplified as the train employees would hereafter be working for only one company instead of two as at present when they are working on trains traveling into or out of Texas.

Turning to Division 4's labor conditions, Mr. Bell said that were the commission to sanction them, the railroad would be placed in the position of having to pay two unemployment insurance assessments in view of the fact that at present it is paying \$1,500,000 a year to the federal government for railroad unemployment insurance and would also have to pay the displaced employees for from one to

five years after they had left the Rock Island's employ. He considered this unfair and discriminatory treatment. Asked if the Washington Agreement would apply to the instant case, he said that it would not because of the fact that it was intended to apply only to men who were displaced because of inter-system consolidations and coordinations as contrasted with intra-system mergers.

Mr. Bell closed his argument by specifically asking the commission to issue an order in the case so that if they did not like it, they could attack it in court. He then complained of the practice of the commission as typified in the instant case of issuing an interlocutory report which, instead of directing the company to do a certain thing, simply says that the railroad may pursue a certain course of action with commission approval only if and when it agrees to certain conditions laid down by the commission. In other words, said Mr. Bell, the commission is trying to coerce the Rock Island to do something against its will by offering to permit the railroad to do it only after the latter has complied with the commission's desires in the matter.

It can readily be seen that in using the interlocutory process as opposed to the direct order, the commission is attempting to force the railroad to do something that the commission either does not feel it has the power to do under the law or knows that it does not have the power. As it is well established that a party cannot bring a legal action to test an interlocutory order which is nothing more than a negative order, the issuing of such a report leaves the railroad in the peculiar position of either having to accept the commission's conditions or drop the case.

During Mr. Bell's closing argument asking for a positive order, Commissioner Porter, who with Commissioner Meyer, handed down the present decision, asked, "Haven't we been issuing negative orders in such cases as the New York Central consolidation and the Union Pacific merger of operating companies?"

"Yes, you have," answered the Rock Island general counsel, "but you have no legal right to do it. You issue a negative order, and you know good and well that we can't attack a negative order."

R. W. Fairchild, appearing for the Railroad Commission of Texas, and the City of Fort Worth urged the commission to deny the Rock Island the right to lease the Texas corporation and move its accounting offices to Chicago. Mr. Fairchild said that the Texas law compelling railroad corporations operating in the state to have a charter in that state and maintain their principal offices there was a good one in that it tended to reduce absentee ownership. Commissioner Eastman wanted to know whether or not the attorney would recommend such a law for every other state. "Yes, I think it would be a good thing for every state," answered the Texas attorney.

He also warned the commission that it was not improbable that if the accounting offices are moved from Fort Worth, the citizens of that city will turn their business to other competing lines. He also said

### Mrs. Roosevelt Denies Getting Amlie Appointed

Mrs. Roosevelt, at a press conference on February 27, denied published reports that she had recommended the appointments of Thomas R. Amlie and J. Haden Alldredge for positions on the Interstate Commerce Commission. Mrs. Roosevelt went on to say that she did not know either of the appointees and that she had never suggested anyone for an office.

that if the tendency of railroad companies is to move their offices out of the state, the people of Texas may decide to repeal the 7,000-lb. weight limit law for trucks, which, according to Mr. Fairchild, was enacted for the benefit of the railroads. Commissioner Rogers interrupted to ask if the law had been enacted for the benefit of the railroads. "Yes," said Mr. Fairchild, "just read the law."

Labor's part in the case was presented by Horace Bacus of the Brotherhood of Railroad Clerks, who urged the commission to either adopt Division 4's report or deny the authority asked for. Discussing the question of the interlocutory report, Mr. Bacus asserted that "the essence of the administrative process is selectability." He went on to tell the commission that the language of the Act is permissive and not mandatory and does not force the commission to enter an order even though it finds a merger or lease to be in the public interest. Commissioner Eastman wanted to know whether there was any advantage in the interlocutory report as contrasted with issuing an order with stipulations or conditions. Mr. Bacus could see no difference.

Otis F. Glenn, attorney for the trustees of the Rock Island, appeared briefly and said that the trustees were motivated only by a desire to save money and put the railroad on a paying basis. He asserted that they regretted having to let off any men, but that they could see no other way out. Commissioner Meyer asked him what he thought about the possibility of economic reprisals by citizens of Fort Worth. "I don't think the commission should pay any attention to them," he answered.

The argument in the L. & A. case followed much the same lines as that in the Rock Island case. A. L. Burford, general counsel for the L. & A., told the commission that he preferred that it attach no labor conditions to its order, but he desired that it issue an order in the case instead of leaving it as it now is. He expressed the belief that the labor question could be worked out under the terms of the Washington Agreement. The State of Texas and the Railroad Commission of Texas opposed this merger on the ground that it would throw Texas citizens out of work and would violate the Texas law by removing the principal offices of the L. A. & T. from the state. He warned that the state might force the L. & A. to cease doing intrastate business in Texas if the carrier violated the law by not maintaining its offices in the state.

### Trans-Missouri-Kansas Board Meeting

The seventeenth annual meeting of the Trans-Missouri-Kansas Shippers Board will be held at St. Louis, Mo., on March 7. At a joint luncheon with the St. Louis Traffic Club, Matthew S. Sloan, chairman of the board and president of the Missouri-Kansas-Texas will be the principal speaker.

### Annual Meeting of Mechanical Division

The annual meeting of the Mechanical division of the Association of American Railroads will be held in New York on June 28, 29 and 30, convention headquarters being the Commodore Hotel. In order to give the members an opportunity to inspect the transportation exhibit at the World's Fair, there will be one session each day from 9 a. m. to 1 p. m.

### Correction

In an article entitled "Wabash Keeps Eye on Engine House Supplies", published in the *Railway Age* of February 4, the statement that the stock at the Decatur roundhouse is handled by one helper and two laborers on each eight-hour shift should have read one helper and two laborers, or one man on each eight-hour shift.

### Ruling of the Attorney General

The Attorney General of the United States has ruled that the Secretary of the Treasury has authority under Section 3469 of the Revised Statutes, to accept an offer to compromise by present payment in cash of a part of the amount due on the loan made by the United States to a railroad under Section 210 of the Transportation Act of 1920, and no action by the Interstate Commerce Commission in connection therewith is required.

### Fans to Give Whistle to "Coronation Scot"

A standard American locomotive whistle will be given the "Coronation Scot" of the London, Midland & Scottish (Great Britain) by American model railroad "fans" when the train visits Chicago on April 2. The whistle, a token of good will, will be appropriately engraved and will be kept on the locomotive as a memento of the American visit, as was the bell presented to the "King George V" locomotive when it visited the United States in 1927.

### New Haven Inaugurates Providence-New York Trailer Service

The New York, New Haven & Hartford has extended its truck-trailer-on-flat-cars service to include shipments between Providence, R. I., and New York, effective February 23. The road's trailer service was originally started between New York and Boston in January, 1938, and the Providence service is an addition thereto. According to the special tariff issued in connection with the service, the railroad will haul highway semi-trailers containing all kinds of freight (except live animals, fish and fresh fruits and vegetables, explosives and articles of extraordinary value) in

either direction between Providence and Harlem yard, New York, for \$28 loaded. Empty semi-trailers will be carried for \$14 in either direction when a loaded movement has been previously accorded. The minimum charge when the day's consignment does not exceed one semi-trailer is \$56 in each direction and \$28 and the day's consignment does exceed one empty semi-trailer. The Boston-New York service was described in the *Railway Age* of February 5, 1938, page 283.

#### Hearing on Alldredge Appointment

Public hearings on President Roosevelt's nomination of J. Haden Alldredge for the Interstate Commerce Commission position now held by Commissioner Frank McManamy will probably be called by the Senate interstate commerce committee's sub-committee considering the nomination. The sub-committee has received requests for such hearings but its chairman, Senator Johnson, Democrat of Colorado, has not set a date for them when this issue went to press.

The sub-committee considering the Alldredge appointment is the same one which has under consideration the appointment of Thomas R. Amlie to succeed Commissioner Balthasar H. Meyer.

#### Western Railway Club

The Western Railway Club, Chicago, will join with the American Railway Engineering Association, the National Railway Appliances Association, the Western Society of Engineers and the Maintenance of Way Club of Chicago in a dinner meeting at the Hotel Sherman, Chicago, on Wednesday evening, March 15, at which the relation of locomotive design to rail maintenance will be presented from the standpoint of the mechanical officer by K. Cartwright, mechanical engineer, New York, New Haven & Hartford, and from the standpoint of the track maintenance officer by H. R. Clarke, engineer maintenance of way, Chicago, Burlington & Quincy.

#### Court Orders Stokers on Locomotives

A three-judge federal court at Cleveland, Ohio, on February 28, ordered railroads to install automatic stokers on all modern coal burning locomotives. The order specified that 20 per cent of the locomotives be equipped with automatic stokers each year for five years, beginning July 1, 1938. Approximately 180 railroads had sued to enjoin the Interstate Commerce Commission from enforcing its order of December 27, 1937, contending that the installations would cost \$39,003,000 or more. The order will apply to practically all locomotives used on main lines. Railroad attorneys are studying the decision and it is quite possible that an appeal will be taken to the Supreme Court.

#### H. & M. Seeks Court Review of I. C. C. Fare Order

The Hudson & Manhattan filed an action in the federal court at New York on February 23 seeking to set aside a ruling of the Interstate Commerce Commission of

#### 1938 Net Deficit \$122,911,784

Class I Railroads in 1938 had a net deficit after fixed charges of \$122,911,784, according to complete reports made public by the Association of American Railroads on March 3. This was the largest net deficit after fixed charges in the history of the railroads except in 1932, when there was a net deficit of \$139,203,821.

July 11, 1938, allowing a fare of eight cents between stations in Jersey City, N. J., and Hoboken and downtown New York, but rejecting the road's request for a ten-cent fare for the same journey. The road's petition seeks a review of Commission's findings by the court on the ground that the former exceeded its authority in rate making by depriving the company of its property without due process of law. The brief asserts that the Hudson & Manhattan's earnings even under the eight-cent fare failed by \$1,000,000 to meet operating expenses and interest charges.

#### T. & T. Program Announced

The Telegraph & Telephone section, Association of American Railroads, will hold its 20th annual session at the Hotel Jefferson, St. Louis, Mo., April 18 to 20, inclusive. In addition to the regular committee reports the following papers will be presented during the sessions:

"Inductive Disturbances and Their Effects on the Operation of Telegraph Circuits" by L. M. Jones, assistant to engineer of lines, Western Union Telegraph Company; "Some Engineering Considerations in Loading Circuits" by J. A. Parrott, engineer of special services, American Telephone & Telegraph Company; "The Relation of an Adequate Communication System to Efficient Train and Yard Operation" by D. A. Fawcett, assistant to assistant general manager, New York Central.

#### R. R. Equipment to Be Discussed at Automotive Congress

Several papers of interest to railroaders will be presented at the 1939 World Automotive Engineering Congress of the Society of Automotive Engineers, Inc., which will be held at various points throughout the United States from May 22 to June 8, inclusive. According to the tentative program, two papers of particular application to the railroad field will be presented at the truck, bus and rail car session on May 25 in the Hotel Pennsylvania, New York. Col. E. J. W. Ragsdale of the Edward G. Budd Manufacturing Company will present "Engineering Problems Involved in the Use of Ferrous Metals to Reduce Weight," and Frank Jardine of the Aluminum Company of America will read a paper entitled "Engineering Problems Involved in the Use of Non-Ferrous Metals to Reduce Weight."

On May 26, at the same headquarters, a session on the Diesel engine will be held under the chairmanship of F. G. Shoemaker, Detroit Diesel Engine division,

General Motors Corporation, at which time G. L. Neely of the Standard Oil Company of California will read a paper "Recent Developments in Diesel refracting oils." On June 7 at the Hotel Fairmont, San Francisco, Cal., an afternoon session on the Diesel engine will be held under the chairmanship of Mr. Shoemaker, wherein the application of the Diesel engine to railroad transportation will be presented by A. R. Walker, electrical equipment engineer, Illinois Central, Chicago.

#### New Equipment on Order

Class I railroads on February 1, had 6,637 new freight cars on order compared with 6,563 on the same day in 1938, according to the Association of American Railroads. On January 1, this year, there were 5,080 new freight cars on order.

New steam locomotives on order on February 1 totaled 25 compared with 110 on February 1 last year; on January 1, 1939, there were 30 on order. The railroads also had 59 new electric and Diesel-electric locomotives on order on February 1 compared with 21 on February 1, 1938, and 41 on January 1, 1939.

The railroads in January installed 1,020 new freight cars in service compared with 2,148 in January, last year. Five new steam locomotives and 12 new electric and Diesel-electric locomotives were placed in service in January compared with 27 steam and 17 electric and Diesel-electric locomotives put in service in January, 1938.

#### Maritime Commission Launches Rate Investigation

The United States Maritime Commission has announced the institution of a comprehensive investigation into rates, charges, rules, regulations and practices prevailing in the intercoastal shipping trade. The investigation involves all carriers subject to the Intercoastal Shipping Act, 1933, and engaged in the transportation of property in interstate commerce via the Panama Canal, and all carriers participating in their rate agreements.

The commission's announcement says that the investigation arises out of a series of petitions filed with it expressing dissatisfaction with the existing intercoastal rate structure, and is broad enough to enable the commission to fix both minimum and maximum rates, determine port relationships, and determine whether one or more rate levels shall apply in the intercoastal trade.

#### New Report in Rate Case Involving Comparative Cost Data

Examiner Charles M. Bardwell has recommended in a proposed report after further hearing that the Interstate Commerce Commission lift the suspensions on railway tariffs proposing truck-competitive rates on naval stores from points in Mississippi to Gulf of Mexico ports. Another recommended finding is that the commission prescribe minimum rates for the transportation of rosin from Columbia, Miss., to Gulfport, over the Evans Motor Freight Lines.

This is the case wherein the evidence included comparative data on the costs of rail and motor transportation, compiled in

accordance with formulae developed by the Interstate Commerce Commission's Bureau of Statistics. In his original proposed report (see *Railway Age* of August 27, 1938) Examiner Bardwell had recommended disapproval of a couple of the rates proposed by the railroads.

### B. & O. Chief Asks Employees Aid In Putting Over Interest Plan

A bid for employee support and understanding of the Baltimore & Ohio plan for modification of interest charges and maturities is contained in a statement by Daniel Willard, president of the road, printed in the February issue of the company's magazine for circulation among 40,000 officers and employees. After explaining the main provisions of the plan, the president points out that in order to make it fully effective it will require the co-operation of the holders of 90 per cent of the affected securities, numbering more than 77,000 security holders, among whom are a large number of small individual owners.

Mr. Willard further observes that many of the security holders have not yet assented, although they have expressed approval, because they do not feel that their assents are important because of small individual holdings. To these Mr. Willard replies that in the aggregate the support of small holders is absolutely essential, and requests the assistance of employees of the railroad in making the plan clear to such holders.

### Suggest Public Operation of Westchester Road

A citizens' committee appointed by Governor Lehman of New York in August, 1938, to investigate the possibilities of resuming operation of the New York, Westchester & Boston suburban electric road, which shut down on December 31, 1937, in compliance with an order of the federal district court, unofficially indicated that it would ask the Port of New York Authority to undertake a survey of the possibilities of public ownership and operation of the line, in response to suggestions made public at a conference between civic officers of communities along the line and members of the committee held in White Plains, N. Y., on February 27.

Although public operation would entail the loss of over \$300,000 in local taxes annually formerly collected from the road, several representatives indicated a belief that the loss in property values due to cessation of operation has been far greater in amount. No civic officer has as yet, however, made any commitment as to reactivation or waiver of taxes in the event that service is resumed.

### N. J. Legislature Turns Down Tax Settlement Proposal

The New Jersey state legislature has formally refused the offer of railroads in the state to settle for 72.5 per cent of their state taxes for 1932 to 1938, inclusive, and pay \$12,200,000 of more than \$34,200,000 withheld by certain carriers under a plan of paying only 60 per cent of state taxes contested by the roads before the State

Board of Tax Appeals and the courts. At the same time the railroads concerned have indicated their intention to "go ahead with litigation." Five of the carriers have taken appeal to the United States Supreme Court from an adverse decision of the federal circuit court of appeals on withheld taxes for 1932 and 1933 handed down on November 15, 1938, and await a decision on their petition for a writ of certiorari thereon filed February 11. Decision on taxes for 1934 to 1936, inclusive, is pending in the federal district court for New Jersey, while hearings on taxes for 1937 and 1938 have been resumed in the State Board of Tax Appeals.

### New Haven's Smoking-Car Quiz Takes Humorous Tack

A sad tale of a certain commuter, Mr. Upjohn, whose cough sent him for relief to a non-smoking car and his subsequent discovery that it was almost as smoky as the smoking car itself is related in a 12-page questionnaire booklet distributed to



**Front Cover Cartoon of the New Haven's Questionnaire on the Smoking-Car Problem  
"Does Smoke Get in Your Eyes?"**

its commuters in and out of New York by the New York, New Haven & Hartford as a frontal attack on the increasing problem of "illicit smoking" on suburban trains. Well illustrated by pen and ink cartoons by Frank Etienne (in the Gluyas Williams manner), the booklet seeks to attract attention in a humorous and engaging picture of conditions to a violation of the rules by commuters against which many non-smokers are protesting strongly.

Mr. Upjohn noticed that the volume of smoke in the non-smoking car grew thicker as the train approached the city terminus, whereupon he drew up an "Album of Premature Lighter-Uppers." These, the booklet classifies as the furtive type, the smoke-stack type, the "important" type, the novice type, the restless type and the absent-minded type. Each "genus" is represented by an appropriate cartoon and caption.

In a questionnaire the company asks each passenger to suggest a solution to its problem.

The idea of the booklet lies with R. L. Pearson, operating vice-president, and F. J. Wall, traffic vice-president of the New Haven, who evidently grew weary of answering denunciatory letters from irate passengers. The text and format were worked out by Dickie-Raymond, Inc., sales

counsel of Boston, Mass., in cooperation with the railroad's publicity and passenger departments. It is reported that over 5,000 questionnaire blanks have already been received.

### Private Truckers Oppose I. C. C. Regulation

Opposition to Interstate Commerce Commission rules and regulations for so-called private trucks was expressed generally by commercial representatives, traffic managers of Chambers of Commerce, local truckmen's organizations and others at a hearing which opened at the New Yorker hotel, New York, on February 23 before Examiner Snow. Participants in the hearing based their opposition largely on the allegation that the private trucks were already adequately regulated by agencies of the states and that federal control would only entail "overlapping jurisdictions" and confusion. Some witnesses declared that the trucks are already subjected to too much regulation.

Those organizations which did not categorically oppose I. C. C. rules for trucks generally, insisted that no attempt should be made to regulate trucks operating predominantly in single commercial zones which fall within the definition of exempt areas under Section 203 (b) of the Motor Carrier Act. The hearing was adjourned on February 25 and will resume in other cities as scheduled.

### Reed Bill Would Reorganize I. C. C.

Senator Reed, Republican of Kansas, on March 1 introduced in the Senate a bill (S. 1660) calling for a redistribution of Interstate Commerce Commission functions whereby there would be created within the commission administrative, finance and rate divisions. The bill would also regulate rates and other activities of water carriers, provide for the co-ordination of minimum rates of all transport agencies and create a transportation planning board.

The bill's Title II, which would set up the planning board, also embodies a proposed declaration of policy designed to strengthen the national transportation system by "eliminating the sources of waste and weakness," and by utilizing each agency "in the most effective way" so that the several carriers will be able to meet their needs for growth, modernization and the development of the best practical service at the lowest reasonable rates.

On the previous day Senator Reed introduced a joint resolution (S.J.Res.81) providing for the discontinuance of services, liquidation of the assets and winding up of the affairs of the government-owned Inland Waterways Corporation and its affiliate, the Warrior River Terminal Company.

### New Haven Film Boosts New England

A sound motion-picture film promoting New England's historical, scenic and recreational advantages, entitled "New England-Yesterday and Today", has been prepared by the New York, New Haven & Hartford as its contribution in an extensive section-wide campaign to induce pros-

pactive World's Fair visitors to include New England in their plans. The film is not a promotion project for the railroad itself; indeed it contains but a few railroad "shots" as background material. Furthermore the film describes the advantages of all the New England states and not merely of that territory which the New Haven services.

The film is being released in two forms, according to Samuel A. Boyer, advertising manager of the road. An 11-minute, 35 mm. version has been prepared for commercial distribution and bookings in more than 500 theatres in the country have already been arranged. In addition, it is expected that a 22-minute 16 mm. release will be presented before some 2,500 club and organization audiences in New England and vicinity. As a supplement to the film, the New Haven has also distributed an attractive folder describing the recreational attractions of the section.

### The A. A. R. and Seatrail

The Missouri Pacific and the Texas & Pacific were unsuccessful at last week's Washington, D. C., meeting of the Association of American Railroads' board of directors in their efforts to persuade the directors to rescind a recently-adopted resolution supporting the position of the A. A. R.'s predecessor, the American Railway Association, with regard to per diem on cars delivered to Seatrail Lines, and in support of the old A. R. A. rule forbidding the delivery of cars to Seatrail without the consent of car owners.

The A. A. R. directors are understood to have taken the position that the A. A. R. has jurisdiction over per diem, and thus the representations of the M. P. and T. & P. that it should abandon its position for lack of jurisdiction were not well founded. To the contention of the two protesting roads that the present A. A. R. position amounts to partisan intervention in a dispute among A. A. R. members, the directors are understood to have replied that A. A. R. was taking no position on the question of what through routes and joint rates, if any, should be established in connection with Seatrail's car-carrying vessel operating between Hoboken, N. J., and New Orleans, La., via Havana, Cuba, because through routes and joint rates do not fall within A. A. R. jurisdiction.

### Reports on Motor Applications

Examiner John S. Higgins of the Bureau of Motor Carriers' Section of Finance has recommended in a proposed report that the Interstate Commerce Commission authorize the Frisco Transportation Company, affiliate of the St. Louis-San Francisco to purchase certain rights and property of two truck lines operating out of Memphis, Tenn.—the J. W. Parker Truck Line and Tolson's Transfer. The examiner would impose the usual condition that the authority granted be subject to such restrictions as the commission may find it necessary to impose "in order to insure that the service shall be auxiliary or supplementary to the train service of the railroad, and shall not unduly restrain competition."

Joint Board No. 70, composed of Frank J. McArdle of Maine, has recommended

approval of the application of the Maine Central Transportation Company, affiliate of the Main Central, for common-carrier bus certificates covering operations between Bangor, Maine, and Mattawamkeag, and between Stockton Springs and Ellsworth.

Joint Board No. 231, composed of Richard D. Grant of Massachusetts, has recommended in a proposed report that the commission grant a common-carrier bus certificate to the New England Transportation Company, affiliate of the New York, New Haven & Hartford, for operations between Buzzards Bay, Mass., and Woods Hole, serving also Monument Beach, Pocasset and Cataumet as off-route points.

### Material and Equipment Exhibit at Chicago

Plans are now practically complete for the twenty-eighth annual exhibit of the National Railway Appliances Association which will be held at the International Amphitheatre, Chicago, on March 13-16, coincident with the conventions of the Signal section, A. A. R., and the American Railway Engineering Association. A large attendance is expected at the exhibit in view of the two conventions. Furthermore, it is expected that a large number of purchases and stores department officers will see the exhibit, since the Purchases and Stores division, A. A. R., has arranged a number of committee meetings in Chicago during the convention week.

To make attendance at the exhibit as convenient as possible for those attending the two conventions and the meetings of the Purchases and Stores division, frequent complimentary bus service will be operated between the Amphitheatre and the Palmer House and the Stevens Hotel.

In addition to the 60 companies which had arranged to present exhibits up to the first of February, as noted in the *Railway Age* of February 4, seven additional companies, as follows, have arranged for exhibit space:

Chipman Chemical Company, Bound Brook, N. J.  
DeSanto & Son, Inc., A. P., Philadelphia, Pa.  
Electric Railway Improvement Company, Cleveland, Ohio  
Evans Products Company, Detroit, Mich.  
Fansteel Metallurgical Corp., North Chicago, Ill.  
Hayes Track Appliance Company, Richmond, Ind.  
Hunter Manufacturing Corp., New York

### Record in Average Freight-Train Speed Set Up in 1938

A new high record in the average speed of freight trains was established by the railroads of the United States in 1938, J. J. Pelley, president of the Association of American Railroads, announced on February 27. This average speed, according to reports for the year which have just become available, was 61 per cent higher than in 1920.

In 1938, the average distance traveled per train per day was 398 miles, compared with 386 miles in 1937 and 247 miles in 1920. This represents the average time required for the movement of all freight trains between terminals, including all delays en route. In recent years, the statement points out, "there has been a marked speeding up of freight service on the railroads of this country. In many instances freight trains are now being operated on what were formerly passenger schedules. The fruit

grower in California is now four days nearer the Eastern seaboard markets than formerly, and corresponding reductions in freight train schedules have also been made between many other parts of the United States. Between many important commercial centers, in some cases as much as 500 miles apart, overnight freight service is being furnished by the railroads.

"This increase in the average speed of freight trains has been made possible by a number of factors. Because of improvements in locomotive and freight car construction, the number of delays due to mechanical failures has been reduced. Use of locomotive tenders with a greater fuel and water capacity has reduced the number of stops for supplies en route. Length of locomotive runs has been increased. In addition, improvements in roadway, signals, and methods of operation have further expedited the movement of loaded freight cars through terminals and over the road."

### Ownership of A. R. T. Decided

The United States Circuit Court of Appeals at St. Louis, Mo. on February 24 upheld a district court decision holding that the Missouri Pacific owns two-thirds and the Wabash one-third of the American Refrigerator Transit Company. When the A. R. T. Company was incorporated, the Wabash, the Missouri Pacific and the St. Louis, Iron Mountain and Southern, now a part of the Missouri Pacific, each contributed \$14,985 in cash to the capital and took a one-third stock interest. Two contracts were entered, an operating contract which might be terminated by the transit company on 60 days' notice and a stockholders' agreement providing that the railroads should share in the transit company's earnings in proportion to the business each contributed to the new company. The railroads contributed no additional money to the capital, which eventually was paid up out of earnings. In addition, dividends were paid until 1911. In 1917, the board of directors of the transit company terminated both contracts.

In 1921, the Wabash filed a suit in equity, contending that the transit board had no authority to terminate the stockholders' contract and that its action was void. Later, however, the Wabash consented to termination of the contract. The district court held, in determining that the Wabash owned one-third of the transit company, that the Wabash could not argue that an action was void when it had subsequently consented. The Wabash contended the ownership should be determined on the basis of the business up to 1917, when it had a greater proportionate share in the earnings than it had subsequently.

### January Truck Loadings Above January, 1938

The movement of freight by truck continued in January to hold above the volume of a year ago, according to reports compiled by the American Trucking Association. The January traffic exceeded the tonnage of January, 1938, by 26.5 per cent, but it was 2.8 per cent under December, 1938. The A. T. A. index figure based on the 1936 monthly average as 100, stood at 103.83 in January compared with 81.76 for

January a year ago, and 107.02 for December, 1938.

Comparable reports were received from 213 motor carriers in 41 states who transported an aggregate of 780,460 tons. These same carriers transported a total of 617,249 tons in January, 1938, and 802,753 tons in December, 1938.

The 2.8 per cent decrease in total tonnage under December, 1938, was attributed to seasonal trends in large traffic centers, accompanied by drivers strikes in Boston, Mass., and Omaha, Nebr. The only January gain over the preceding month was in the general merchandise class, which accounted for slightly more than 70 per cent of the total volume of freight handled by truck; this gain was 1.9 per cent.

Petroleum products, which represented about 13.5 per cent of the total volume reported, showed a decrease of 1.7 per cent under December, but a 12.6 per cent increase over the corresponding month last year. Transporting of automobiles declined 17.8 per cent under December, but increased 49 per cent over the volume of January a year ago. While transportation of iron and steel showed a decline of 41 per cent the preceding month, the January volume represented an increase of 95.2 per cent over January, 1938.

### Rail Abandonments Cutting Mail Pay

The extent to which "the evolution of rail transportation has brought large decreases in the appropriations for railroad transportation of mails and for personal services incident to the handling of railway mail," was emphasized by Representative Ludlow, Democrat of Indiana, in his discussion in the House of Representatives on February 24 of the Treasury-Post Office appropriation bill for the year ended June 30, 1940.

"For paying railroads for carrying the mails," Mr. Ludlow said, "the estimate of one hundred and two million submitted to us for 1940 is \$5,750,000 below the appropriation for 1939. For personal services of employees in the Railway Mail Service the estimate of \$56,000,000 for 1940 is \$1,500,000 below the 1939 appropriation. We allowed the Budget estimate in the latter item and substantially the Budget estimate for railroad transportation.

"The wholesale discontinuance of trains by the railroads, which is one of the phenomena of modern times, has thrown much of the mail that formerly was handled by the railroads over into the star routes, and while railway-mail items are going down the star-route expenditure is going up.

"Testimony of Department officials was that this condition not only will continue but, in the language of Mr. Cole, Deputy Second Assistant Postmaster General, it will 'grow worse'. The Department not only has transferred \$150,000 this year from its railroad transportation appropriation to its appropriation for star routes, but it is expecting an unexpended balance of \$3,700,000 in its railroad transportation appropriation at the end of the present fiscal year. We had a good deal of testimony from officials that they are not forcing the withdrawal of mails from the trains but rather are following the natural course of transportation development which imposes

upon them the responsibility of seeing that the mails are transported and delivered by the most feasible means available when trains are withdrawn. Recognizing the increased burden thrown upon the star routes, we have increased the star-route appropriation for 1940 \$550,000 over the appropriation for 1939."

### A. R. E. A. Convention Program

The program for the fortieth annual convention of the American Railway Engineering Association, which will be held at the Palmer House, Chicago, on March 14-16, has now been completed as follows:

TUESDAY, MARCH 14

Morning Session—9:45 a. m.

Convention called to order

Address of President, F. E. Morrow, chief engineer, Chicago & Western Indiana.

Address by J. W. King, vice-president, Operations and Maintenance Department, A. A. R.

Reports of Secretary and Treasurer

Reports of committees on:

Standardization

Electricity

Special—Clearances

Uniform General Contract Forms

Economics of Railway Location and Operation

Afternoon Session—2 p. m.

Reports of committees on:

Waterways and Harbors

Highways

Maintenance of Way Work Equipment

Water Service, Fire Protection and Sanitation

Address on The New England Hurricane and Its Effect on the Railroads, by C. E. Smith, vice-president, N. Y. N. H. & H.

Adjournment at 4 p. m. to visit the exhibit of the national Railway Appliances Association at the International Amphitheatre

WEDNESDAY, MARCH 15

Morning Session—9 a. m.

Reports of committees on:

Signals and Interlocking

Economics of Railway Labor

Track

Special—Complete Roadway and Track Structure.

Roadway and Ballast

Association luncheon—12 o'clock

Afternoon Session—2:30 p. m.

Reports of committees on:

Rail

Special—Stresses in Railroad Track

Ties

Wood Preservation

THURSDAY, MARCH 16

Morning Session—9 a. m.

Reports of committees on:

Buildings

Yards and Terminals

Records and Accounts

Special—Waterproofing of Railway Structures

Iron and Steel Structures

Afternoon Session—2 p. m.

Reports of committees on:

Masonry

Special—Economics of Bridges and Trestles

Wood Bridges and Trestles

Special—Impact

Closing business

On Wednesday evening the association will join with the Western Railway Club in a program at the Hotel Sherman to consider the relation of locomotive design to rail maintenance.

### Everybody Should Pay for Roads Is "Highway Users'" Policy

Condemnation of the so-called "diversion" of state highway vehicle taxes for general purposes of government and collection by the federal government of special excise taxes on motor vehicles, tires, accessories or motor fuel is, among other things, the expression of opinion set forth in a 14-page "outline of policies" on Highway Taxation, Finance and Administration recently prepared by a special committee of the National Highway Users' Conference consisting of L. J. Taber, master of the National Grange; T. P.

Henry, president, American Automobile Association; H. P. Sheets, president, Retailers' National Council; and F. C. Hornier, General Motors Corporation.

The outline divides highways and streets into five classifications for purposes of cost allocation. The first—main trunk interstate highways—should be supported by the federal government "as a fair charge against the general revenue of the government, the Conference believes. A portion of the cost of the second and third types—main trunk state highways and intermediate highways—should also "be regarded as a fair charge against the general revenue of the federal government." So-called land service roads, "because of their predominantly local use," should be paid for exclusively by revenues raised by general or property taxation of the country (or comparable political subdivision) "other than special motor imposts", while in the case of city streets, only those which form necessary connections in trunk highways should properly be paid for by special motor imposts and general revenue of the federal government. The remainder should be paid for by local taxes other than special vehicle imposts.

The "outline of policy" not only attacks "diversion" of special motor vehicle taxes, but as well the levying of special federal excise taxes on motor vehicles, tires, accessories or motor fuel "since the government's obligation to carry mail and provide for the national defense makes federal highway aid a proper charge against general al revenue."

[In short, the Conference would have it that general taxation, either of a federal or local property variety, be regarded as a proper source of funds for all or a part of each of the five types of highway, and that special imposts on motorists and the motor industry which now furnish a part of the source of federal highway grants be abolished.—Ed.]

### Congressional-Committee Hearings

Five Congressional-committee hearings on proposed legislation of interest to the railroads were in progress on Washington's Capitol Hill this week. While one subcommittee of the Senate committee on interstate commerce was considering bills designed to effect equality in the inter-territorial freight-rate structure, another was taking up the so-called through-routes bill which would empower the Interstate Commerce Commission to prescribe through routes and joint rates without reference to the short-hauling of any carrier. On the House side the committee on interstate and foreign commerce suspended its consideration of Chairman Lea's omnibus transport bill to give four days of hearings to the consideration of inter-territorial freight-rate bills similar to those before the above-mentioned Senate sub-committee; while the judiciary committee's sub-committee on bankruptcy and reorganization took up the so-called Chandler bill which is designed to aid in expediting the voluntary reorganization of railroads which have submitted their financial problems to their security holders.

The principal reason for the introduction of the above-mentioned inter-territorial

freight-rate bills was the South's dissatisfaction with the present adjustment of rates between Southern territory and Official territory. As noted elsewhere in this issue the Interstate Commerce Commission this week received a proposed report recommending that it give the South about all it asks in that connection. In that case, the so-called Southern Governors' Rate Complaint, the South is contending for South-North rates on the destination basis. At the Congressional-committee hearings some of the witnesses advocated that the I. C. C. be required by law to adhere to that destination theory of inter-territorial rate making; others advocated a cost-of-service theory, while still others merely wanted the enactment of a resolution of the Hoch-Smith variety directing the commission to look into the present inter-territorial structure.

Interstate Commerce Commissioner Joseph B. Eastman, chairman of the commission's legislative committee, was the first witness at the Senate sub-committee's hearing on S.1085, the through-routes bill. He advocated a favorable report, saying that the bill was the same as the measure passed by the Senate during the last session of Congress except for changes along lines recommended by the I. C. C. at that time. This bill is favored by short-line railroads, but since some of its members are also understood to be for it the Association of American Railroads is not expected to take a position.

Among the witnesses appearing at the hearing on the voluntary reorganization bill was Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, who favored the bill and presented his analysis of it to the sub-committee. Provisions of this Chandler bill were summarized in the *Railway Age* of February 11, page 281.

#### Freight Car Loading

Revenue freight carloading for the week ended February 25 totaled 560,609 cars, the Association of American Railroads an-

nounced on March 2. This was a decrease of 19,462 cars, or 3.4 per cent under the previous week, an increase of 48,670 cars, or 9.5 per cent above the corresponding week in 1938, but a decrease of 131,784 cars, or 19 per cent below the corresponding week in 1937.

As reported in last week's issue, the loadings for the previous week ended February 18 totaled 580,071 cars, and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loadings			
For Week Ended Saturday, February 18			
Districts	1939	1938	1937
Eastern .....	128,363	113,767	160,709
Allegheny .....	113,244	97,669	150,393
Pocahontas .....	43,284	34,984	55,053
Southern .....	91,683	89,899	107,213
Northwestern ..	68,419	64,220	78,297
Central Western..	91,374	89,515	104,557
Southwestern ..	43,704	45,812	55,092
<b>Total All Western District</b> .....	<b>203,497</b>	<b>199,547</b>	<b>237,946</b>
<b>Total All Roads. Commodities</b>	<b>580,071</b>	<b>535,866</b>	<b>711,314</b>
Grain and Grain Products	28,587	31,875	29,458
Live Stock .....	11,120	11,203	11,660
Coal .....	129,424	102,679	156,579
Coke .....	7,656	5,415	12,060
Forest Products.	24,387	26,286	36,937
Ore .....	8,944	8,160	10,945
Merchandise i.c.l.	148,250	146,915	166,612
Miscellaneous ..	221,703	203,333	287,063
February 18 ...	580,071	535,866	711,314
February 11 ...	579,918	542,991	688,523
February 4 ...	576,790	564,740	671,227
January 28 ...	549,379	553,176	653,022
January 21 ...	590,359	570,233	665,346
<b>Cumulative Total, 7 Weeks</b> ....	<b>4,039,243</b>	<b>3,900,314</b>	<b>4,785,513</b>

In Canada.—Car loadings for the week ended February 18 totaled 39,886 as compared with 39,227 in the previous week, and 44,826 last year, according to the compilation of the Dominion Bureau of Statistics.

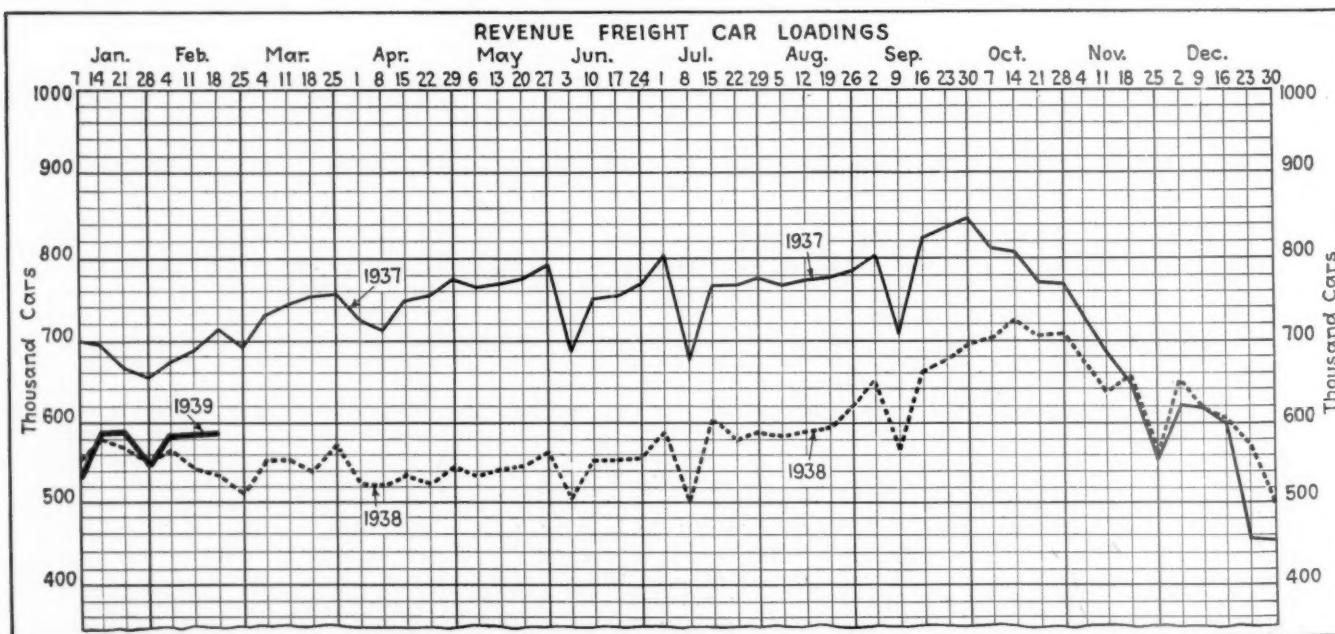
	Total Cars	Total Cars Rec'd from Loaded Connections
Total for Canada		
Feb. 18, 1939 .....	39,886	22,933
Feb. 11, 1939 .....	39,227	22,941
Feb. 4, 1939 .....	40,430	22,461
Feb. 19, 1938 .....	44,826	21,092
<b>Cumulative Totals for Canada:</b>		
Feb. 18, 1939 .....	277,462	158,292
Feb. 19, 1938 .....	313,438	154,123
Feb. 20, 1937 .....	324,573	189,147

#### Wheeler Seeks Reform, But Wants Relief As Well

Contending that the railroads, when they constituted a transportation monopoly, "had little sympathy for the consuming public" they should, nevertheless, now receive "unselfish" consideration of their problems by the public, Chairman Burton K. Wheeler, of the Senate on Interstate Commerce committee, discussed one by one his opinion of past and present practices of the carriers and his legislative plans for their reform, in a speech before the 37th annual dinner meeting of the Atlanta (Ga.) Freight Bureau on February 25. The speaker touched on the alleged abuses of railroad bankers, railroad subsidiaries, railroad holding companies and railroad officers in the past; the much publicized discrimination in rates as between the freight rate territories; the "wholesale violation of the long-and-short-haul principle" and the problem of financial reorganization of bankrupt carriers.

In outlining his legislative program for the railroads, the senator emphasized that "legislation must not only be of a reform nature, but must also furnish relief to the railroad industry". He would give the Interstate Commerce Commission, which, in his opinion, is at present an Interstate Railroad Commission, power to regulate all forms of transportation. He plans to introduce legislation containing provisions to "insure the soundness of the financial structures that will emerge from the reorganization process". He believes that Congress must enact laws to prevent the recurrence of the "costly and scandalous examples of railroad mismanagement" which he could enumerate involving wastes in stock purchases, wastes in reorganizing, wastes in "buying materials at monopolistic prices," wastes in financing and the purchase of property and "other wastes which have been and are forceful factors in producing the present condition of the railroads."

Speaking of rates and services, Senator Wheeler declared that the roads "are geared for mass production"; "that there



# LIMA POWER AT WORK



## Let Modern Power Set The Pace

Modern locomotives increase train loads and increase train speeds without increase in locomotive weights \*\* Look at modern power as an investment that, after all proper charges including amortization have been made, will yield a handsome profit because it moves trains faster and at less cost.

LIMA LOCOMOTIVE WORKS,



INCORPORATED, LIMA, OHIO

must be mass consumption of the services they offer". Hence, it is his conviction that lower rates tend to increase the volume of traffic and net revenues, a theory "that is an established fact in the instance of many railroads."

### Club Meetings

The next meeting of the Metropolitan Traffic Association of New York on March 9 at the Hotel Imperial, New York, has been designated as "Railroad Night." The guest speaker will be William Fitzgerald, freight traffic manager, Chesapeake & Ohio. J. E. Sweeney, Jr., Union Carbide Company, will conduct a preliminary discussion of Section 5 at 6:45 p. m.

The Central Railway Club of Buffalo will hold its next meeting on March 9 at the Hotel Statler, Buffalo, N. Y., at 8 p. m. "The Chilled Car Wheel" will be discussed by John Matthes, chief car inspector, Wabash, Decatur, Ill.; W. R. McMunn, superintendent rolling stock, Merchants Despatch Transportation Corporation, East Rochester, N. Y.; and A. J. Krueger, superintendent car department, New York, Chicago & St. Louis, Cleveland, Ohio. In addition, a talking motion picture entitled "The Story of the Chilled Car Wheel" will be shown. Irish Songs will be sung by the Central Railway Club Chorus and entertainment provided by courtesy of the New York Car Wheel Company.

The Eastern Car Foreman's Association will hold its next meeting on March 10 in Room 502, Engineering Societies building, 29 West 39th street, New York. The subject of the meeting is "Loading Rules." H. L. Phife, Freight Container Bureau, Association of American Railroads, will be the speaker. Motion pictures made by Freight Container Bureau showing graphically methods of loading and how loads shift in cars will be presented.

The Northwest Car Men's Association will hold its next meeting on March 6 at the Midway Club, St. Paul, Minn. A paper entitled "Lubrication" will be presented by L. T. Evans, manager of the Hoosier Waste Renovating Company.

### Nit League Stands Pat on Rate Rule

The National Industrial Traffic League, at a special meeting held in Washington, D. C. on February 23 for the purpose of considering transportation legislation, rejected proposals that it go on record as favoring the repeal of the present rate-making rule in the Interstate Commerce Act and the enactment of legislation placing regulation of water carriers under the Interstate Commerce Commission. In taking this action the League voted in accord with previous positions taken by it.

The two proposals favoring the repeal of the rate-making rule and the regulation by the commission of water carriers provoked long and heated discussion by members of the League. At a meeting held on the previous day the special committee on railroad legislation and the executive committee voted by the close margin of 14 to 12 to recommend the repeal of the present rate-making rule. However, when the question was brought to a vote the mem-

bers voted 77 to 41 to favor the retention of the rule as incorporated in the Act.

Because of a close division of views on the subject of water carrier regulation, the executive committee and the special committee did not recommend the enactment of legislation placing water carrier regulation under the commission, but simply referred the proposition to the League for its consideration. After considerable discussion which showed that there was little unanimity of opinion among the members on the question, a motion that the League stand on its previous position of favoring no further regulation of water carriers was adopted by a vote of 75 to 24.

The League also adopted a recommendation of the executive committee and the special railroad committee that it favor empowering the commission to create a transportation board to investigate matters of consolidation, coordination, economical operation and plans for the improvement of the transportation system as a whole and make a report thereon.

Also approved was the recommendation of the special committee that the League's position in favor of voluntary consolidations of railroads be restated and that to facilitate such consolidations there should be legislation repealing the present requirements as to a comprehensive plan, balanced systems, maintenance of all possible competition, and preservation of existing trade channels, and that rail carriers should be permitted to bring about such voluntary consolidations and coordinations as would result in economies, assure adequate service and preserve reasonable competition.

The League also voted to approve a recommendation that it favor the provisions of the Chandler bill, H. R. 3704, which would permit the railroads to work out arrangements providing for postponement of payment of obligations and interest charges in order to avoid reorganization under the Bankruptcy Act and the wiping out of equities.

The proposed recodification of the Interstate Commerce Act at this time was opposed by the League. It was explained that this resolution referred to the efforts of the President's committee-of-six to rewrite the present Act so as to include several changes in the law. Another recommendation of the committee-of-six opposed by the League was the proposed reorganization court.

The League adopted a resolution opposing any statutory regulation of the commission and declared that it was time that the membership of the League "acting under our constitutional purpose of co-operation with regulatory bodies and with transportation companies, should sound a clear note of warning against merely critical and complaining attacks on the commission."

### U. S. Roads Have More Than Half of World's Speed Runs

More than half of the total of passenger train runs in the world scheduled start-to-stop at 60 m.p.h. and over are operated by railroads in the United States, according to a review of railway speed developments in 1938 published by our British contem-

porary, the Railway Gazette. Surveying train services in operation during the summer of 1938, the article reveals that the world total of runs booked at a mile-a-minute and over has reached 93,312 miles, of which 48,247 are operated in the United States. Runs scheduled at 70 m.p.h. and over have reached a total of 10,169 miles in all countries, of which the American roads are responsible for 4,415 miles. It is emphasized that, notwithstanding the depression, the American carriers have "continued their bold policy of acceleration" and have attained these very high totals. As recently as 1932 the total of American 60-m. p. h. runs was but 2,022 miles.

According to tables accompanying the article, the "Hiawatha" of the Chicago, Milwaukee, St. Paul & Pacific is the fastest steam-operated train in the world, attaining 73.9 m. p. h. on its 43.1-mile run between New Lisbon, Wis., and Portage. The Pennsylvania's "Detroit Arrow" is a close "runner-up" with 73.6 m. p. h. on the 140.9-mile run between Ft. Wayne, Ind., and Englewood, Ill. The fastest Diesel train in the world is reported to be the "Flying Cologner" of the German State Railways which attains an over-all speed of 82.2 m. p. h. on the 109.6-mile run between Hanover and Hamm. Second in the group is the American "City of Denver" of the Union Pacific, which is operated at a start-to-stop speed of 81.4 m. p. h. between Grand Island, Neb., and Columbus, a distance of 62.4 miles. To the United States belongs also the honor of operating the fastest electrically-propelled train, as the Chicago, North Shore & Milwaukee, interurban road, is credited with two runs scheduled between Kenosha, Wis., and Waukegan, a distance of 15 miles, at a start-to-stop speed of a flat 75 m. p. h. Second place in this classification is given to the Italian State Railways for a run between Rome and Naples scheduled at 71 m. p. h. for 130.5 miles. The Pennsylvania's Congressional "takes third place for its 71.3 m. p. h. schedule on the 76-mile route between North Philadelphia, Pa., and Newark, N. J.

The author of the article is of the opinion that for the present the limit of speed appears to have been reached. In fact, there are only two runs in Germany and the United States, respectively, scheduled at over 80 m. p. h., start-to-stop. This compares with six such runs in 1937. On the other hand the addition of numerous new schedules in all major countries has brought with it a tremendous general speed-up in passenger services.

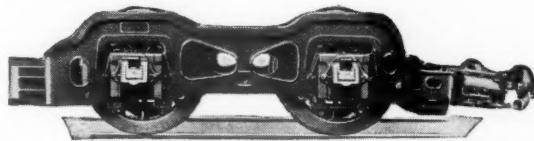
### Bland Introduces Water Carrier Regulation Bill

Representative Bland, Democrat of Virginia and chairman of the House committee on merchant marine and fisheries, has introduced in the House H. R. 4307, a bill which would provide for the regulation of all common carriers by water in interstate commerce, whether operating on inland waters, the Great Lakes, or the high seas by the Maritime Commission, and co-ordination of regulation by that commission and the Interstate Commerce Commission. The bill also would provide for the regu-



## **WHEEL LOAD LIMITS need not cramp your operations**

Limited axle loads can still produce an efficient modern locomotive if idle trailing wheels are put to work for starting and acceleration. » » » Incorporate The Locomotive Booster\* in the fundamental design and thereby raise the starting power and improve acceleration without impairing the factor of safety on existing tracks.



\* Trademark Registered United States Patent Office



### **FRANKLIN RAILWAY SUPPLY COMPANY, INC.**

NEW YORK

CHICAGO

MONTREAL

lation of terminal facilities. Chairman Bland announced that hearings on the bill would begin before the House merchant marine and fisheries committee on March 7.

Senator Barbour, Republican of New Jersey, has introduced S. 1526, a bill to amend the Motor Carrier Act with respect to the definition of "metropolitan district" and exemption from regulation of operations in municipalities, zones or metropolitan districts. The bill would define the term "metropolitan district" as any district designated as a metropolitan district in the publication issued by the Bureau of the Census, Department of Commerce, and entitled "Fifteenth Census of the United States—1930—Metropolitan Districts."

Representative Murdock, Democrat of Utah, has offered H. R. 4372, a bill which would provide for the punishment of persons transporting stolen animals in interstate commerce.

Representative Cochran, Democrat of Missouri, has introduced a new government reorganization bill, H. R. 4425, which would give the President power to reorganize government departments subject to Congressional approval. Such independent agencies as the Interstate Commerce Commission are exempted from the provisions of the bill except with respect to supervision of estimates of appropriation.

Representative O'Neal, Democrat of Kentucky, has introduced H. R. 4537, a bill which would terminate the power of the commission to determine the need for federal regulation of the size and weight of motor vehicles. Under the present law the commission is given the power to determine what need exists for such regulation and it has an investigation pending to determine that need.

In last week's discussion of Senator Minpton's bill, S. 1512, it was not made clear that the effect of the bill would be to remove from the commission's jurisdiction those motor carriers operating within a single state. However, as noted in last week's issue power would be retained by the commission as to joint through rates and in those cases where motor carrier operation is affected with a substantial national interest.

Representative Celler, Democrat of New York, has offered in the House H. R. 4235, a bill providing for the creation of an administrative court which would review, among other things, orders and decisions of the commission. Senator Logan, Democrat of Kentucky, has a similar bill pending in the Senate.

#### Consolidation of Exhibits

The Committee for the Consolidation of Railway Supply Associations, composed of representatives of the National Railway Appliances Association, the Track Supply Association and the Bridge and Building Supply Men's Association, adopted a resolution outlining its aims and objectives at a meeting in Chicago on January 26. This committee is composed of E. D. Cowlin, chairman, Eaton Manufacturing Company, Reliance Spring Washer Division, and H. H. Talboys, Nordberg Manufacturing Company, representing the N. R. A. A.; E. C. Argust, Morden Frog & Crossing Works, and R. J. McComb, Woodings-

Verona Tool Works, representing the Track Supply Association; and W. S. Carlisle, National Lead Company, and G. R. McVay, Ruberoid Company, representing the Bridge and Building Supply Men's Association. The resolution follows:

WHEREAS, the attention of officers of several of the railway supply men's associations has been called to the fact, by manufacturers of supplies, and railroad officers, that duplication of effort and needless expense exist in exhibiting their products and appliances to overlapping aggregations of railway associations, and that in the interest of greater efficiency, a wider showing to potential users and a broader educational spread to more of the railroad men could be effected by a consolidated exhibit that would show during a concurrent convention period which would include participation by elect groups of the railroad associations and affiliated supply men's associations who now meet separately in convention.

AND WHEREAS, it is declared by the association that the committee recognizes the scientific and social value of the several railway groups to the personnel of their respective memberships, and in no way does the Committee for Consolidation of Railway Supply Associations elect to have the specific organizations lose their identity or functional operations.

AND WHEREAS, the committee desires to meet the demand of the manufacturers of railroad equipment to exhibit to a larger number of men through a consolidated exhibit at one time and place, as opposed to the plan of exhibiting at a number of conventions, necessitating a selection of one or more of these conventions for exhibition purposes, thereby depriving other groups of railroad men of the educational value that could be obtained by one consolidated exhibit on a larger and more extensive scale, provided that conventions of participating engineering associations would co-operate and hold their meetings concurrently at some agreed upon time and place.

AND WHEREAS, the possibilities of a consolidated association composed of all the groups serving as a clearing house for the dissemination of knowledge of mutual interest to all of the groups is apparent.

THEREFORE, be it resolved that the aims and objectives of the organization, in regular session of the Committee for Consolidation of Railway Supply Associations, are to wit:

FIRST: To effect an organization composed of representatives selected by the various railway engineering groups and railway supply men's associations who have a common interest and who shall elect to be members of the organization through voluntary expression of their membership body, each associate membership organization to be represented by an officer who shall be vice-president of the organization, thereby insuring the continuity and identity of the respective organizations represented, said vice-presidents to be in charge of all individual activities of groups respectively represented.

SECOND: To study ways and means to adopt a more efficient, extensive and broader plan to exhibit railroad devices, wares, equipment, etc., to a larger number of railroad men through some agreed upon plan to hold the participating member organization's meetings concurrently at a place and time to be agreed upon.

THIRD: That the above tenets of the resolution shall be considered the basic objective, but if in the judgment or the election of joint resolutions from the membership bodies, conditions and exigencies that may arise, demand adaptation and amendments, the association reserves the right to adopt by vote any such amendments or additions to the above adopted tenets.

Several associations of railway men have appointed representatives to join with the Committee for Consolidation of Railway Supply Associations in the consideration of these objectives and it is expected that the two groups will meet in the near future to map a program of activity in the interest of the supply manufacturers and the railway organizations.

#### South Wins First Rate-Fight Round

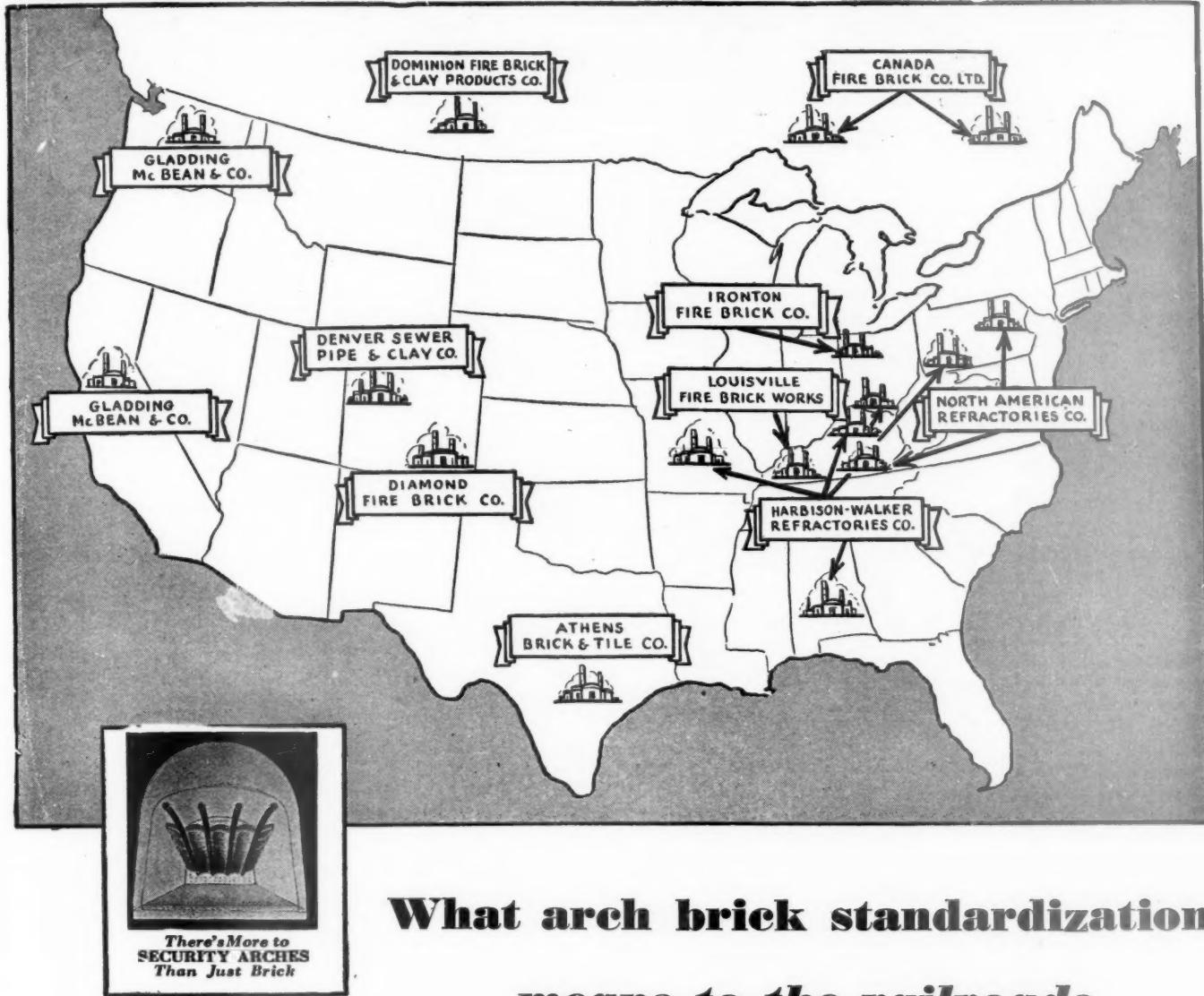
(Continued from page 389)

such rates are not in effect today it is due to the failure or refusal of the Northern carriers to join in their publication." The Southern roads further emphasize that the foregoing attitude "is not new, but has been their fixed policy for more than 50 years;" but in stating their position they "make it clear that they do not advocate any fixed rule or formula for uniform application in the determination of northbound inter-territorial rates but, on the contrary, believe the circumstances and conditions surrounding the transportation of each commodity, including particularly the nature and extent of the commercial competition it encounters in the North, should be considered, the principal guide, however, being the destination territory level."

With respect to the commodities named in the complaint, the Southern carriers "express the view that the rates sought should be established." With the Southern roads thus willing to sacrifice a part of their present revenues, Messrs. Lee and Corcoran find it "difficult to conceive of any just reason why Northern carriers should not be required to join them, for it is the Northern level of rates which the Southern carriers desire to establish."

In its general discussion leading up to the recommended findings the proposed report says that "The desirability of rate structures providing reasonably uniform rates on like articles which are or may be produced in different sections of the country from such sections to common markets, is not open to serious question. The maintenance on such articles of rates reflecting territorial differences in rate levels, thereby creating rate walls along the borders of rate territories, tends to prevent a nation-wide development of industry and is not conducive to the promotion of the best interests of either the carriers as a whole or the country as a whole."

*Continued on next left-hand page*



## What arch brick standardization means to the railroads

Where one roundhouse is serving several railroads, the value of Arch Brick standardization is emphasized.

Long before the present agitation for engineering standardization, American Arch Company had brought order out of Arch Brick chaos.

Designs and sizes had been simplified. Instead of each railroad having its own design of Arch Brick, a relatively few sizes and designs served all the locomotives of all the railroads of the country. Arch Brick were made interchangeable and a great step toward economy had been taken.

This is just one example of the many ways in which the concentration of American Arch Company on Arch Brick for 25 years has benefited the railroads.

**AMERICAN ARCH COMPANY  
INCORPORATED**  
**Locomotive Combustion Specialists**  
**NEW YORK** **CHICAGO**

## Commerce Department Changes Mind on Florida Canal; It's O.K. Now

The Department of Commerce, which in 1934 found that the proposed Florida Ship Canal was not justified on the basis of prospective benefits to shipping, now finds that conditions have so changed that the potential "savings" would "undoubtedly justify its cost, and emphasize the desirability of its construction." This latest report came to the Senate last week from Acting Secretary of Commerce R. C. Patterson, Jr., in response to the resolution introduced by Senator Vandenberg, Republican of Michigan, calling upon the Department to bring the 1934 findings up to date.

Meanwhile the Acting Secretary of the Interior, in response to another Vandenberg resolution, has submitted an up-to-date report from the United States Geological Survey which has not altered its previous opinion as to the adverse effect of a sea-level canal on ground water levels and on ground water supplies.

Mr. Patterson sent along a report on the project from Acting Director N. H. Engle of the Bureau of Foreign and Domestic Commerce. This report, Mr. Patterson says, "points out that according to the Annual Statistical Report of the Chief of Engineers, for 1937, the volume of commerce of Gulf coast ports has increased nearly 100 per cent over 1931, the year on which the data for the original study were based. The Bureau further points out that its original study was based on a 200-foot lock canal, whereas the present proposal of the Chief of Engineers recommends a sea-level canal with a minimum bottom width of 400 feet. These changes operate to increase greatly the economy of the project.

"In recommending this project to Congress, the Chief of Engineers has placed its construction cost at \$197,921,000, with annual charges for interest (at 3½ per cent), maintenance, operation, and depreciation at \$8,641,000. On the basis of the potential 1937 use and benefits of the project, there would thus be a net annual surplus of \$6,293,000. It appears reasonably certain that this annual surplus will be substantially greater by the time the canal can be completed, and that it will continue to increase thereafter."

As pointed out in the *Railway Age* of January 21, President Roosevelt recently sent letters to the chairmen of the Senate committee on commerce and the House committee on rivers and harbors, asking for a reconsideration of the Florida canal. The House committee began hearings on the project this week while the Senate committee has set March 15 as the tentative date for the beginning of its hearings.

The report from the Acting Secretary of the Interior states that the problem has not changed since the cessation of construction in 1937 by the Corps of Army Engineers from emergency funds and since the 1937 hearings on Florida canal bills. "No new evidence," the report says, "has appeared since the opinion of the Survey on the effect of a sea-level canal on ground water levels and on ground water supplies was expressed directly by Survey representatives at hearings before the House rivers and harbors committee and in letters

responding to inquiries from members of Congress and others that were placed in the record of the hearings. The opinions thus expressed were based on a quarter-century of general studies of the geology and ground waters of the state of Florida and of the United States. In the absence of new evidence or of altered plans for the canal there is no basis for a modification of the opinions thus expressed." The report notes that the foregoing applies to a sea-level canal, and not to a lock-level canal. The change from plans for a 200-ft. lock canal to the present proposal for a sea-level waterway was cited by Acting Secretary of Commerce Patterson as one reason for the Bureau of Foreign and Domestic Commerce's altered attitude toward the project.

## Equipment and Supplies

### February Equipment Orders

Domestic equipment houses received orders during February for a total of 3 locomotives and 2,004 freight cars, all for service in the United States. No passenger-train cars were ordered during the month.

### Domestic Equipment Orders Reported in Issues of The Railway Age in February, 1939

LOCOMOTIVES				Builder
Date	Name of Company	No.	Type	
Feb. 25	Ford Motor Company.....	3	Diesel-electric	General Electric Co
Feb. 11	Union Pacific .....	2,000	Box	Company Shops
Feb. 25	U. S. Navy Dept. ....	2	Flat	Magor Car Corp.
		2	Box	Greenville Steel Car Co.

The month's total brings the purchase-record for the year thus far to 11 locomotives and 2,007 freight cars. The passenger car total remains at 47. American manufacturers also received an order during the month for 2 locomotives for export.

Orders for rail placed during the month totaled 123,310 tons, which brings the total for the year thus far to 331,830 tons, as compared with a total of 68,440 tons ordered during the corresponding two months of 1938.

### LOCOMOTIVES

THE FERROCARRIL DE ANTIOQUIA (Colombia) has ordered two locomotives of the 2-8-2 type from the Baldwin Locomotive Works. Roberto Diez is chief of operation, Medellin, Colombia.

THE UNION PACIFIC has ordered fifteen 4-8-4 type locomotives for passenger service from the American Locomotive Company. The locomotives will have 80-in. drivers and 300-lb. steam pressure.

THE SOUTHERN PACIFIC has ordered 40 steam locomotives; of these, 28 oil-burning locomotives of the 4-8-8-2 cab-in-front type, are for freight and passenger service on the Pacific lines, and were let to the Baldwin Locomotive Works, and 12 coal-

burning locomotives of the 2-8-8-4 type, for service on the Rio Grande division, were let to the Lima Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of January 21, page 174.

### FREIGHT CARS

THE WABASH is inquiring for 35 caboose cars.

THE UNION PACIFIC has ordered 1,500 freight car underframes from the Mount Vernon Car Manufacturing Company and 500 from the Pacific Car and Foundry Company.

THE LEHIGH & NEW ENGLAND, reported in the *Railway Age* of January 7, page 105, as inquiring for 100 hopper cars, has ordered 100 all-steel center-dumping hopper cars of 50 tons' capacity from the Bethlehem Steel Company.

THE MAINE CENTRAL is in the market for 150 gondola cars of 50 tons' capacity and 150 gondola cars of 40 tons' capacity.

### IRON AND STEEL

THE READING has ordered 30 tons of structural steel from the Fred Grundy Iron Works for use in connection with construction work at Allegheny avenue, Philadelphia, Pa., and 118 tons of struc-

tural steel from the American Bridge Company, for use on the reconstruction of Bridge No. 10/75, Jenkintown, Pa.

THE KANSAS, OKLAHOMA & GULF is inquiring for 4,400 tons of rail.

THE RICHMOND, FREDERICKSBURG & POTOMAC is inquiring for 2,300 tons of rail.

THE WESTERN MARYLAND has placed orders for 1,000 tons of rail with the Carnegie-Illinois Steel Corporation and 1,000 tons with the Bethlehem Steel Company.

THE ILLINOIS CENTRAL has ordered 8,500 tons of 112-lb. rails, placing 4,500 tons with the Carnegie-Illinois Steel Corporation, and 4,000 tons with the Inland Steel Company.

ERIE.—President Charles E. Denney of this company recently stated that it may buy about 30,000 tons of rail and fastenings during 1939, and may also buy about 1,000 freight cars, provided traffic conditions warrant these purchases.

THE CENTRAL OF NEW JERSEY-READING COMPANY are in the market for 10,000 tons of 130-lb. rail for their 1939 requirements, including 6,000 tons for the Central of New Jersey and 4,000 tons for the Reading Company.

# Cylinder Horsepower depends on quality of steam equally as much as pressure

The Elesco tangential steam dryer effectively separates the moisture from the steam. With a moisture carryover as much as 20%, the dryer operates at an efficiency of better than 80%.

applying Elesco tangential steam dryers to your power.

## THE SUPERHEATER COMPANY

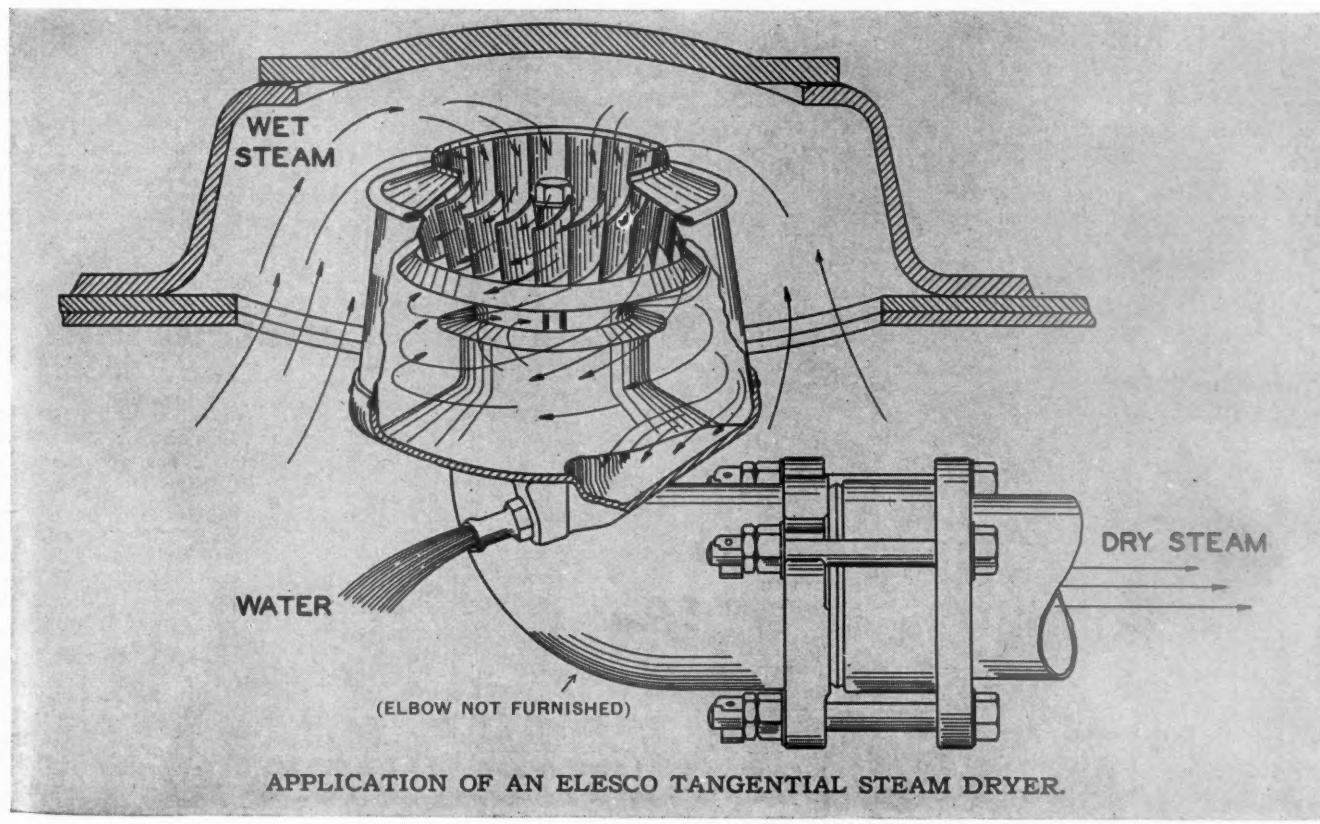
Representative of American Throttle Company, Inc.

60 East 42nd Street, New York  
122 S. Michigan Ave., Chicago  
Canada:

The Superheater Company, Limited, Montreal  
A-1303

### Maintain cylinder horsepower by

Superheaters • Superheater Pyrometers • Exhaust Steam Injectors • Feed Water Heaters • American Throttles • Tangential Steam Dryers



## Supply Trade

### American Steel Foundries

The annual report of the American Steel Foundries for 1938 shows a loss of \$1,750,235, as compared with a net profit of \$3,617,761 in the previous year. Gross sales, less discounts, returns and allowances, for 1938 were \$12,207,205 as compared with \$35,972,070 in 1937. Current assets at the end of the year amounted to \$12,401,998 and current liabilities \$1,227,274.

**John F. Deems**, has joined the staff of the Edna Brass Manufacturing Com-



John F. Deems

pany as vice-president in charge of sales and sales development. Mr. Deems will have his headquarters in Cincinnati, Ohio, where the general offices and main plant are located. He was born at Tupper Lake, N. Y., and is a graduate of Columbia University. His railroad experience included service in various capacities on the Lehigh Valley, the Baltimore & Ohio, the Delaware & Hudson and the Delaware, Lackawanna & Western. For the past five years, Mr. Deems has been associated with the Union Asbestos & Rubber Co.

**J. T. Whiting**, vice-president of the Alan Wood Steel Company, Conshoh-



Phillips Studio

J. T. Whiting

hocken, Pa., has been elected president, and **C. E. Davis**, assistant to the vice-president, succeeds Mr. Whiting as vice-

president. **Clement B. Wood**, formerly chairman of the board and president, remains as chairman of the board.



C. E. Davis

Mr. Whiting received his education as a mechanical engineer at the University of Michigan, from which he was graduated in 1909. In July of that year he entered the metallurgical department of the Illinois Steel Company at its South Works, South Chicago, Ill., and from there went into the blast-furnace department. He has worked successively for the By-Product Coke Corp. (then managed by the Semet-Sovely Co.), South Chicago; the Federal Furnace Co., South Chicago; the Whitaker-Glesner Co., Portsmouth, Ohio; the Steel & Tube Co. of America, Mayville, Wis., and the Donner Steel Co., Buffalo, N. Y. In September, 1927, he became vice-president and general manager of the Hamilton Coke & Iron Co., Hamilton, Ohio, and on January 1, 1932, was elected vice-president of the Alan Wood Steel Company.

Mr. Davis worked successively for the American Sheet & Tin Plate Co., the United Alloy Steel Co., the Central Alloy Steel Company, and the Republic Steel Corporation, before associating with the Alan Wood Steel Company eight years ago. For the past two years he has been assistant to the vice-president. For a year and a half during the World War Mr. Davis was in the U. S. Marine Corps with the A. E. F. in France.

**Charles L. Eggleston**, formerly assistant chief car draftsman of the Southern Pacific, with headquarters at San Francisco, Cal., has been appointed special representative of the **United States Rubber Company**, Mishawaka, Ind., with headquarters at Chicago, to handle the sale of sponge rubber to the railroads.

**S. E. Gillespie** has been elected vice-president of the **Western Railroad Supply Company**, Chicago. Mr. Gillespie was born on December 17, 1884, at Newtonville, Ohio, and graduated from Ohio State University in 1910. Before graduating from the university he had about two years' experience as a telegraph operator on the Lake Shore & Michigan Southern, the New York, Chicago & St. Louis and the Pennsylvania, and two years' experience maintaining electric interlocking on the Pennsylvania Lines West. After graduating in 1910, he went to work for the Union Switch & Signal Company with

a field crew, erecting signals, and followed this for one year. He entered the engineering department at Swissvale, Pa., in the summer of 1911, and remained there until the spring of 1915, when he was transferred to the sales department in Chicago, remaining there about six years. From 1921 to 1925, Mr. Gillespie represented the Union Switch & Signal Company in Japan, and returned to be assigned again temporarily to the Chicago office of the company, and then to be appointed resident manager at San Francisco, Cal., in 1926. In 1930, he was elected vice-president and director of the Westinghouse International Brake and Signal Company,



S. E. Gillespie

with headquarters in Brussels, Belgium, where he remained until recently.

### OBITUARY

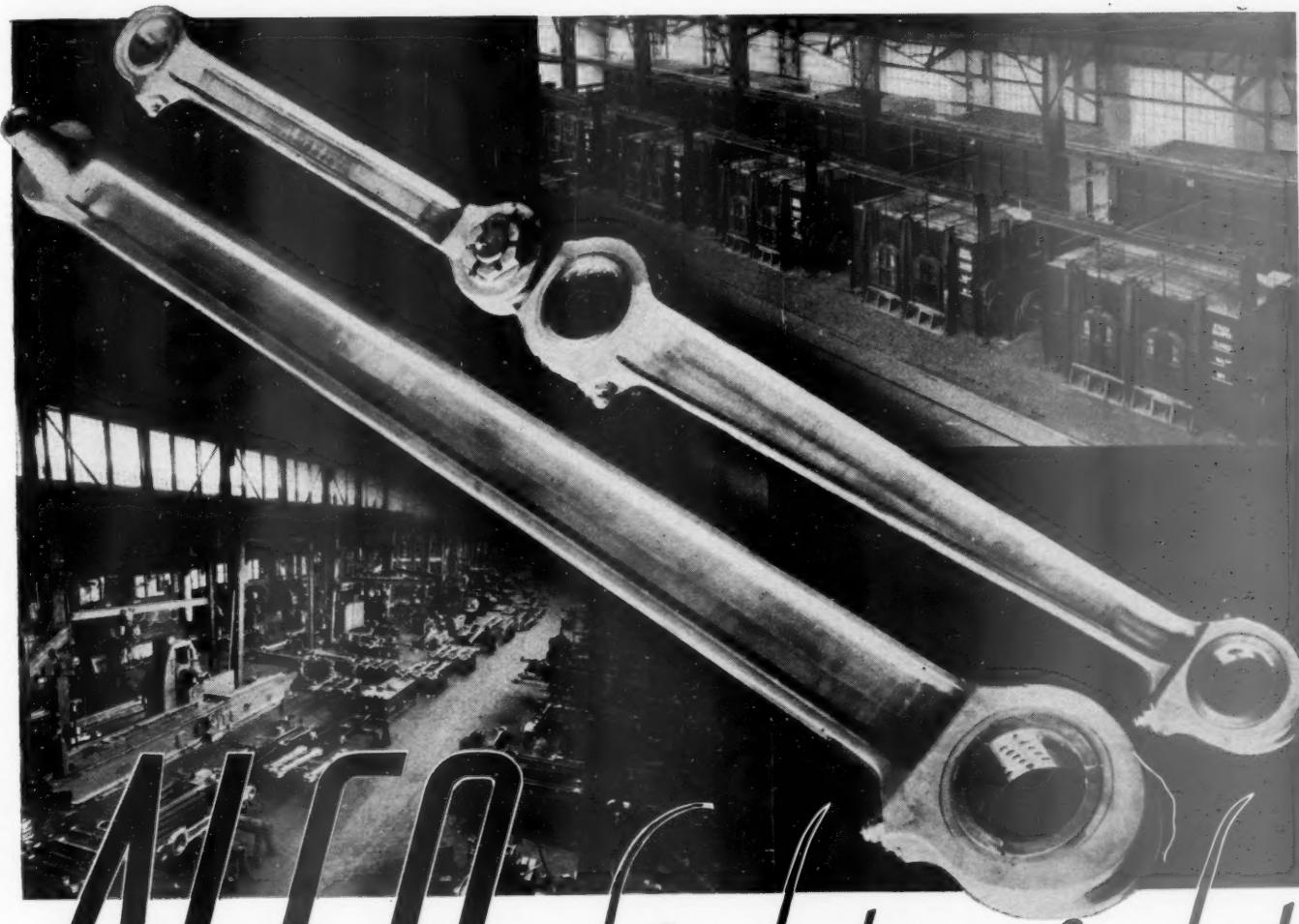
**Charles A. Terry**, honorary vice-president of the Westinghouse Electric & Manufacturing Co., died on February 18 at his home in New York, after a brief illness, at the age of 80 years. Mr. Terry joined the Westinghouse Electric & Manufacturing Co. in 1888 and served as vice-president from 1909 until April 29, 1931, when he became honorary vice-president. As head of the legal and patent departments of the Westinghouse Company, he handled details of many of the major basic patents upon which the electrical industry rests today.

## Construction

**NORFOLK & WESTERN**.—Bids were received February 16 by the Department of Highways, Richmond, Va., for the construction of an underpass and approaches on Hampton Boulevard, Norfolk, Va., at the Norfolk & Western crossing. This construction is a state project in which the city and the railroad company are also involved. W. N. Jackson, Roanoke, Va., was the lowest bidder at \$130,423. C. S. Mullen is chief engineer of the Department of Highways.

**PENNSYLVANIA**.—Contracts have been given to W. F. Trimble & Sons Company, Pittsburgh, Pa., for the construction of a roundhouse at Oil City, Pa., and for altering a freight house at Pittsburgh.

*Continued on next left-hand page*

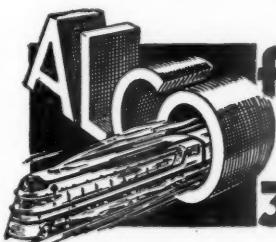


# ALCO *Lightweight* FORGINGS

LIGHT-WEIGHT alloy steel forgings for modern locomotives demand far more than correct engineering design. Engineering ability of the highest calibre must be available, of course; but, unless manufacturing facilities are thoroughly modern, and unless smith shop personnel is specially competent and experienced in this particular class of work—is it possible to compete with ALCO either as to forging quality or price?

ALCO has spared no expense equipping its forging department with ultra-modern, smith shop machinery and with the very latest heat-treating facilities for the scientific production of light-weight, locomotive forgings. Also, ALCO metallurgists, engineers and smith shop experts have had wide experience in locomotive forging manufacture over an extended period of years. Having the added advantage of ALCO's unsurpassed facilities, these men are prepared *in every respect* to meet your locomotive forging requirements with the utmost satisfaction as to quality and price.

**AMERICAN LOCOMOTIVE COMPANY**  
**30 CHURCH STREET • NEW YORK • N.Y.**



## Financial

**BALTIMORE & OHIO.**—*Assets for Interest Plan.*—As of February 27, this road had received total deposits and assets on its plan for modification of interest charges and maturities constituting 80 per cent of the total securities outstanding. An additional 10 per cent must be secured to attain the 90 per cent of deposits and assets necessary to make the plan completely effective.

**CHESAPEAKE & OHIO.**—*Board Enlarged.*—Directors of this road at a meeting in Cleveland, Ohio, on February 21 enlarged the board from 11 to 12 members in spite of the protest of the Alleghany Corporation, top holding company of the former Van Sweringen system. Those elected to the board were H. L. Ferguson, president, Newport News Shipbuilding and Drydock Company and R. C. Gifford, president, First National Bank of Louisville, Ky. J. C. Myers of Ashland, Ohio, recently resigned from the board.

**CHICAGO & EASTERN ILLINOIS.**—*Reorganization.*—The Interstate Commerce Commission, Division 4, has formally ruled that the interests of certain specified classes of creditors of this company will not be adversely and materially affected by the plan of reorganization which the commission approved last November. If the commission's ruling is affirmed by the federal court it will not be necessary to submit the plan to these specified creditors for their acceptance or rejection.

The creditors specifically mentioned were the holders of equipment trust certificates, the Evansville Belt Railway bonds and the Railroad Credit Corporation. Division 4 also ruled that provisions of the plan regarding executory contracts not disaffirmed by the trustee and regarding the guaranty by the debtor of obligations of other companies also would not materially affect interests of creditors concerned.

**CHICAGO, BURLINGTON & QUINCY.**—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized this company to abandon a branch line extending from Van Wert, Iowa, in a southerly direction to Decatur City, 9.1 miles.

**CINCINNATI UNION TERMINAL.**—*Bond interest.*—A bond issue of this company purchased by Lehman Brothers of New York at a price of 106.763 as reported in these columns on February 18, bear interest at the rate of 3½ per cent instead of 3¾ per cent, as erroneously reported in that item.

**CINCINNATI UNION TERMINAL.**—*Bonds.*—The Interstate Commerce Commission, Division 4, has authorized this company to issue \$12,000,000 of 3½ per cent first mortgage bonds, series E, to replace \$12,000,000 of first mortgage five per cent gold bonds, series C, to be redeemed May 1. The new bonds will be dated February 1, 1939, and will mature February 1, 1969. At the same time the commission authorized the Cincinnati, New Orleans & Texas Pacific; the Norfolk & Western; the Cleveland, Cincinnati, Chicago & St. Louis; the

New York Central; the Louisville & Nashville; the Pennsylvania; the Chesapeake & Ohio and the Baltimore & Ohio to assume liability as guarantor for the payment of the bonds.

**DEEP CREEK.**—*Abandonment.*—This company has asked the Interstate Commerce Commission for authority to abandon its entire line extending from Wendover, Utah, to Gold Hill, 45.7 miles.

**DENVER & RIO GRANDE WESTERN.**—*Abandonment.*—The trustees have asked the Interstate Commerce Commission for authority to abandon 2.6 miles of the Manitou branch in El Paso County, Colo.

**LEHIGH VALLEY.**—*Interest Deferment Plan approved.*—The Interstate Commerce Commission, Division IV, has approved this company's interest deferment plan, details of which were given in the *Railway Age* of August 27, 1938.

**LONG ISLAND.**—*Abandonment.*—Examiner J. S. Prichard of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize this company to abandon its Sag Harbor branch extending northerly from a connection with its Montauk division, at Bridgehampton, N. Y., to Sag Harbor, 4.4 miles.

**MAINE CENTRAL.**—*Equipment Trust Certificates.*—This company has asked the Interstate Commerce Commission for authority to issue \$1,250,000 of 3¼ per cent equipment trust certificates.

**NEW YORK CENTRAL.**—*Notes of the Central Greyhound Lines.*—The Interstate Commerce Commission, Division 5, has authorized the Central Greyhound Lines, a New York Central affiliate, to issue its installment promissory note for \$130,000, the proceeds to be used for the construction of a garage and office building.

**PENNSYLVANIA.**—*Abandonment by the Western Allegheny.*—Examiner Jerome K. Lyle of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize the Western Allegheny to abandon operation over that part of its main line extending from a connection with the Bessemer & Lake Erie at Queen Junction, Pa., to a connection with the Baltimore & Ohio at West Pittsburgh, 26.5 miles.

**SOUTHERN PACIFIC.**—*Acquisition.*—This company has asked the Interstate Commerce Commission for authority to acquire the capital stock of the Pacific Motor Trucking Company.

### Average Prices of Stocks and Bonds

	Feb. 28	Last week	Last year
Average price of 20 representative railway stocks..	32.69	30.35	30.85
Average price of 20 representative railway bonds..	62.59	61.10	63.79

### Dividends Declared

**Bangor & Aroostook.**—Cumulative Convertible Preferred, 1½ per cent, quarterly, payable April 1 to holders of record February 28.

**Boston & Albany.**—\$2.00, payable March 31 to holders of record February 28.

**Chesapeake & Ohio.**—50c; Preferred, \$1.00, quarterly, both payable April 1 to holders of record March 8.

**Pittsburgh, Ft. Wayne & Chicago.**—\$1.75, quarterly; Preferred, \$1.75, quarterly, both payable April 1 to holders of record March 10.

## Railway Officers

### FINANCIAL, LEGAL AND ACCOUNTING

**A. Haug**, auditor of the Boston & Albany, with headquarters at Boston, Mass., has been appointed an assistant comptroller of the New York Central system, with headquarters at New York.

### OPERATING

**G. E. Donnatin**, terminal trainmaster on the Southern Pacific, with headquarters at Los Angeles, Cal., has been appointed superintendent of the Los Angeles Union Passenger Terminal.

**A. T. Berg**, assistant superintendent of the Chicago Terminal division of the Chicago, Milwaukee, St. Paul & Pacific, has been promoted to superintendent of that division, with headquarters as before at Chicago, succeeding **Colonel Charles L. Whiting**, whose death on February 13 was announced in the *Railway Age* of February 18. **E. G. Kiese**, trainmaster on the Chicago Terminal division, has been promoted to assistant superintendent of the Chicago Terminal division replacing Mr. Berg.

**Arthur B. Kelly**, whose promotion to assistant general manager of the Gulf Coast Lines (Missouri Pacific), with headquarters at Palestine, Tex., was announced in the *Railway Age* of February 18, was



Arthur B. Kelly

born at Omaha, Neb., on December 28, 1883, and entered railway service on April 22, 1901, as a messenger boy on the Missouri Pacific at Omaha. In June, 1903, he became a telegraph operator at Omaha and six years later he was promoted to dispatcher at Falls City, Neb. In November, 1916, he was advanced to acting chief dispatcher and the following year he was appointed chief dispatcher. In April, 1918, he was promoted to acting trainmaster, with headquarters at Falls City, and three months later he was appointed trainmaster, with headquarters at Coffeyville, Kan. From May, 1925 to August, 1925, he was

# NEW! STOP

SPECIFY  
NALCO NO. 81

the dangerous practice of using soda ash or caustic soda for this purpose which research proves to be most likely to start

## FAILURE

due to caustic embrittlement

## Start your new boilers right

Recent field and laboratory research shows that the cleaning of new locomotive boilers with soda ash or caustic soda is about the worst possible procedure from the standpoint of attack upon the metal, due to concentration of these solutions in the seams of the boiler.

Nalco No. 81 provides both organic and inorganic chemicals considered by leading au-

thorities to furnish the best embrittlement protection. It also contains an oil emulsifying agent which is much more effective than soda ash or caustic soda for cleaning out oil deposits. (Tests on cutting compound show Nalco No. 81 to be five times as effective in emulsification as caustic soda.) Write for detailed procedure to follow for new or repaired boilers.

Above procedure covered by Patent 2,104,528

**NATIONAL ALUMINATE CORPORATION**  
**PAIGE-JONES CHEMICAL CO.**  
6216 West 66th Place • Chicago, Ill.

Standardized tests with special equipment, a part of the Nalco Service, protects Nalco users against embrittlement.

# NALCO SYSTEM OF WATER TREATMENT

inspector of transportation, with headquarters at St. Louis, Mo., and on the latter date he was appointed trainmaster of terminals at Little Rock, Ark. Mr. Kelly was promoted to superintendent of the San Antonio division of the International-Great Northern (Missouri Pacific), with headquarters at San Antonio, Tex., on October 15, 1926, and his headquarters were later transferred to Palestine, Tex. His promotion to assistant general manager was effective February 1.

#### TRAFFIC

**H. S. Zane**, general northwestern freight agent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at



H. S. Zane

Minneapolis, Minn., has been promoted to assistant freight traffic manager, with headquarters at Chicago, succeeding **J. Harry Skillin**, whose death on February 9 was announced in the *Railway Age* of February 18, and **H. L. McLaughlin**, general agent at Pittsburgh, Pa., has been advanced to general northwestern freight agent, with headquarters at Minneapolis, replacing Mr. Zane. **J. Mel Cunningham**, general agent at Duluth, Minn., has been transferred to Pittsburgh, relieving Mr. McLaughlin, and **R. E. Beauvais**, freight and passenger agent at Dubuque, Iowa, has been promoted to general agent at Duluth, succeeding Mr. Cunningham.

Mr. Zane, a native of Kansas, entered railway service in 1904, as a messenger on the Milwaukee at Kansas City, Mo., and later advanced through various positions in the freight traffic department, becoming city freight agent at that point and traveling freight agent, with the same headquarters. In 1926, he was promoted to general agent at Tulsa, Okla., and in 1932, he was advanced to general southwestern freight agent, with headquarters at Kansas City. Mr. Zane was appointed general northwestern freight agent, with headquarters at Minneapolis, on May 1, 1938.

#### ENGINEERING AND SIGNALING

**M. Ellwood Cridlin**, secretary to the engineer maintenance of way of the Chesapeake & Ohio, at Richmond, Va., has been appointed assistant to engineer maintenance of way.

#### OBITUARY

**Daniel C. Rounseville**, who retired as assistant chief engineer of the Chicago & North Western in November, 1926, died in Oak Park, Ill., on February 28.

**F. C. Grant**, district passenger agent of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Chicago, died in that city on February 28.

**Colonel William S. Taylor**, retired assistant to the general superintendent on the Chesapeake & Ohio, with headquarters at Huntington, W. Va., died at Covington, Ky., on January 15.

**Henry Tatnall**, former vice-president in charge of finance of the Pennsylvania, died on March 1 at his home in Bryn Mawr, Pa., at the age of 83. Mr. Tatnall was born on April 30, 1855, at Wilmington, Del., and after service with the Girard Trust Company, Philadelphia, as clerk, treasurer and vice-president, successively, he became president of the Franklin National Bank, Philadelphia. On May 19, 1904, Mr. Tatnall was elected sixth vice-president and treasurer of the Pennsylvania and on March 24, 1909, was elected a director and fourth vice-president, in charge of the finances of that road and its subsidiaries. In 1912 his title was changed to vice-president in charge of finance, from which position he retired under the pension rules of the company on May 1, 1925.

**Milo M. Backus**, assistant chief engineer maintenance of way, Illinois Central, with headquarters at Chicago, died of pneumonia on February 26 at the Roseland Community Hospital in that city. Mr. Backus was born at Clinton, Iowa, on April 3, 1880, and attended Cornell College, Mt. Vernon, Iowa. He entered railway service on April 20, 1902, as a chainman in the engineering department of the Illinois Central, and until August, 1906,



Milo M. Backus

served successively as chainman, rodman and instrumentman on construction work. Upon the latter date he was promoted to assistant engineer on the Kentucky division. In December, 1912, he was appointed supervisor of track on the Carbondale district of the St. Louis division, later being

transferred to the Paducah district of the Kentucky division. In November, 1914, he was advanced to roadmaster of the Springfield division and in June, 1917, he was transferred to the St. Louis division. Mr. Backus was promoted to district engineer of the Western Lines, with headquarters at Waterloo, Iowa, in July, 1920, and in January, 1925, he was further advanced to assistant engineer of maintenance of way, with headquarters at Chicago. He was promoted to assistant chief engineer maintenance of way in August, 1938.

**George W. Wildin**, former general manager of the New York, New Haven & Hartford and former general manager of the Westinghouse Air Brake Company, died at his home in Pittsburgh, Pa., on



George W. Wildin

February 28, at the age of 69. Mr. Wildin was born in Decatur, Ill., and attended Kansas State Agricultural College (B.S. 1892). Entering railroad service with the Atchison, Topeka & Santa Fe in 1892 as mechanical draftsman, he advanced steadily and in 1901 became mechanical engineer of the Central of New Jersey. From 1904 to 1907 he was assistant mechanical superintendent and mechanical superintendent of the Erie, becoming assistant superintendent motive power of the Lehigh Valley in 1907. Mr. Wildin was appointed mechanical superintendent of the New York, New Haven & Hartford in 1907, general mechanical superintendent in 1916 and general manager in 1917. The following year he was appointed general manager of the Locomotive Stoker Company, Pittsburgh, and from 1918 to 1926, was general manager of the Westinghouse Air Brake Company, at Wilmerding, Pa. He then served as assistant vice-president of that company and of the Westinghouse Friction Draft Gear Company.

Mr. Wildin was later connected with the Cardwell Westinghouse Company. Leaving this organization in 1931 he opened an office in Pittsburgh and retained his connection with the Westinghouse Air Brake Company in a consulting capacity. Mr. Wildin was affiliated with several engineering and railway organizations; he served as president of the former American Railway Master Mechanics' Association from 1909 to 1910, and was a past president of the New York Railroad Club and the Railway Club of Pittsburgh.